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TO our friends at home: A happy and prosperous New Year.

To our friends at the European war front, of whatever nation: May this year, begun in battle and blood, attended by sufferings untold and calamities inconceivable, end in peace. May a greater freedom, a broader humanity and a lasting concord be the world's inheritance through succeeding years.

DOING WITHOUT DYES.

THE wonderful adaptability of the rubber trade to unusual conditions has often been remarked. Fresh emphasis is laid upon it at the present time in the substitution of colors, as black for white, in such products as motor tires, for example.

That is not difficult and is in the line of accepted practice. That such substitution should be carried into the field of colored fabrics is, however, novel and opens up a wide and profitable field. Such a problem was successfully met by a rubber company making carriage cloth.

Their product, normally, should be pebbled black rubber on one side and black uncoated fabric on the other, an effect that the customer desired. As no black cloth was to be had, the manufacturer used white, spreading the pebbled side, as usual, and skim-coating the other with a dull black rubber. The result was even more satisfactory than the usual type and bids fair to become the usual thing. If dye shortages and embargoes persist it is possible that similar substitutions will occur in many lines where colored fabrics are used. The possibility of the colored rubber surface, and perhaps a revival of the cemented, flocked surface, is not at all remote.

HIGHER PRICES, AND WHEN?

THE fact that rubber has already reached the dollar figure, combined with the higher cost of fabrics and compounding ingredients, certainly point toward higher prices in finished goods. The smaller manufacturers are apparently most anxious for the change, for as a class they are burdened with a heavier overhead, and owing to more limited capital cannot anticipate their requirements in rubber and materials as far in advance as do the larger interests.

That there is a feeling of unrest is evidenced by the opinions expressed in the trade. Many manufacturers do not hesitate to state that, at present prices, they are not seeking orders with their accustomed diligence. Orders for future deliveries at current prices, it is said, are not desirable, and one case may be cited where an order from a distributor amounting to \$10,000, for 1916 delivery on the basis of recent prices, was turned down. The tendency of the market may also be observed from the fact that certain manufacturers have reduced discounts to dealers and a few have slightly advanced prices.

It is interesting to note that with the present keen competition, all manufacturers are compelled to observe uniform trading practices to guard the interests of their customers. There seems to be a consensus of opinion that should some of the prominent manufacturers advance prices, the example thus set would be universally followed. If any held out, their lower prices would attract orders that would soon exhaust their stocks and they would then be unable to take care of their regular trade, which would be forced into other channels and alienated. On the other hand, it has been suggested as not impossible that large concerns with plentiful supplies purchased when prices were below those now current, may hold off for three or four months. While it may be said that manufacturers' representatives and dealers are looking for an advance sooner or later, realizing that present costs will demand some action, there appears to be a wide difference of opinion as to the probable date of such change, however, in some quarters the guess is hazarded that it will come early in January.

The prevalent opinion is that the advance in tires will probably be one of 25 per cent, although some expect a 15 per cent rise at an early date, to be followed by an additional 10 per cent later. An increase of 15 per cent in the price of mechanical rubber goods is generally expected.

Glancing back but a few years in the tire industry, it will be recalled that the regular practice was to produce tires by hand. Gradually machinery, replacing manual labor, reduced the cost of manufacture. This, combined with greater factory efficiency, largely increased production, the lower cost of rubber, and keen competition, have served in securing repeated price reductions to distributors and dealers.

The repeated reductions in the past were justified by the conditions, and now the indications are that the rapidly increasing material cost will force manufacturers to adopt a higher selling price standard.

WITH CHARITY FOR NONE AND WELFARE FOR ALL.

THE welfare of the worker, the rubber worker, to be specific, has been on the conscience of the rubber employer, to a degree, from the beginnings of the industry, since, shall we say, 1828. For years acknowledgments of such responsibility took the form of turkeys at Thanksgiving or Christmas, with sporadic remembrances to those who in the fallible judgment of the boss appeared worthy. In the shop and out, the workers were almost wholly the architects of their own fortunes, and to their credit, be it said, they built uncommonly well.

The enormous growth of the rubber trade, the broadening of its outlook, a definite formulation of the rules that govern efficiency, however, resulted in organized welfare work. Nor was this confined to any one division of the industry. It developed coincidentally in the great tire, footwear, insulated wire, clothing, hard rubber and druggists' sundries factories. In each line, and indeed in each factory, the work took on its own individuality, and in all the results were an appreciable betterment. This improvement, be it noted, was not confined to the mental, moral or physical condition of the worker alone, but extended to the work both in quantity and quality.

The patent needs of rubber-working communities are model houses, hospitals, garden plots, ball fields, casinos, club houses, special reading courses, lectures—all of which are excellent and are in use today. But they have to do with the welfare during the hours of relaxation only, and efficiency demands more. It provides for the workers' welfare in the factory and during working hours, and outside as well. Thus safety, light, ventilation, are all made as nearly perfect as may be. Dust, because it clogs the human machine and renders it less efficient, is

"vacuumed" away. Glaring lights, because they produce eyestrain, which results in damaged work, are shaded, or walls are tinted, and, when necessary, goggles are supplied, and so on in infinite detail. In the big plants there are also physicians and nurses in attendance who quarantine all who have infectious troubles, from colds to smallpox, render first aid in scores of cases, and do preventive work without end.

"A wonderful charity," say you?

"Charity"—not a bit of it. Efficiency, not charity, is the basis of this work. The human machine is kept clean, sober, amused, interested, because thus it is the best producer. The extra goods produced pay for all these items many times over. Rubber manufacturers do not offer, nor do their help desire, charity. Today's motto is, "With charity for none and welfare for all."

COMMERCIAL SYNTHETIC RUBBER.

THE news comes from Germany—is even affirmed by the German Chancellor in a speech before the Reichstag—of the use of synthetic rubber in lieu of the natural product. The statement is undoubtedly true. At the same time it is probably of no importance to those interested in rubber outside of the countries controlled by the Germanic allies. Before the war synthetic rubber in ton lots was made in Germany. It cost so much, however, that it could not compete in price with either the wild or the plantation product. At the present time, because of the rubber famine in Germany, the price of plantation crêpe is between \$10 and \$12 a pound. At such figures synthetic rubber can be profitably produced. With rubber at 86 cents, however, and no famine, synthetic rubber would still be commercially impracticable. The rubber planter may, therefore, rest secure on a product that costs from one to two shillings, as against one that costs several dollars a pound. The fact that Germany is actually making and using synthetic rubber will, of course, startle some readers. It is for their comfort, therefore, that the foregoing is written. As to further reassurance, there is the fact that the German Colonial Association, in a recent resolution, laid emphasis on the future need to the Fatherland of colonies in which could be grown rubber and gutta percha. They advise plantations, not laboratories. The inference would seem to be sufficiently plain.

UNUSUAL INTEREST ATTACHES TO THE DECISION OF Judge Lacombe, of the United States Circuit Court of Appeals in which he upholds the validity of the Marks patent on the alkali process for reclaiming rubber. Based as it is on a common sense review of the inventor's claims, the decision ranks in importance, as regards the rubber manufacturing industry, second only to the famous decision by which the Goodyear patents were confirmed to the inventor.

Standard Tire Fabrics.

It is not an exaggeration to say that the automobile tire has demanded quite as much thought, inventive skill and scientific development as any other part of the modern motor car. The tire is not a mere cushion, with the road on one side and the wheel with its burden on the other. It is not a passive medium of translation even when placed upon a forward wheel, and when attached to the rear axle its service is virtually that of a prime mover.

Its stresses and strains are many. When driving straight ahead, the blows delivered to the tire differ in magnitude according to the size and nature of the road's inequalities, the speed, the weight of the car and its load. Then there is another series of stresses, lateral ones, when the forward wheels are turned from side to side in steering. Finally come the reverse stresses produced by skidding and the application of the brakes.

Because of its elasticity and resiliency rubber is peculiarly fitted for the cushioning service required; but rubber possesses little strength. Therefore, in order to keep its yielding within bounds, it is necessary to incorporate with the rubber a suitable restraining material. Cotton fabric is universally used for this purpose, as it is not so sensitive to high temperatures, and is not likely to chafe.

Tire fabrics are made today either of Sea Island or of Egyptian cotton. The former originated upon a single island off our southern seaboard. The filament is a long, fine, silky one, and it contains more natural wax, and is whiter and better than the Egyptian staple. But there is not enough of the original island crop to supply the demand, and substantially all of it goes into the fabrication of expensive yarns used in making fine lace. But seeds of the original island staple have for years been planted in suitable soil on the mainlands of Florida and Georgia, and thence comes the present supply of this superior cotton, which is used in the best tires. According to figures, Sea Island cotton enters into something like 25 per cent of the tire fabrics, while the remaining 75 per cent are woven out of Egyptian cotton.

The cross-section of any standard pneumatic tire makes clear at a glance the general arrangement of the different plies of fabric, the duty of each varying with the position occupied in the finished product. The purpose of this fabric and rubber carcass is to protect and hold the inflated inner tube and, at the same time, transmit to the outermost part of the tire, called the tread, the driving impulse exerted at the hub of the wheel. The carcass serves as a barrier between the inner tube and the blows incident to irregularities of the roadbed, and here resiliency is desired to obtain the cushioning effect which makes for the comfort of the occupants of the car.

The greatest care is exercised in the building of the carcass, and in order that it may do efficiently the work expected of it, tire fabrics have undergone an evolution which has demanded a

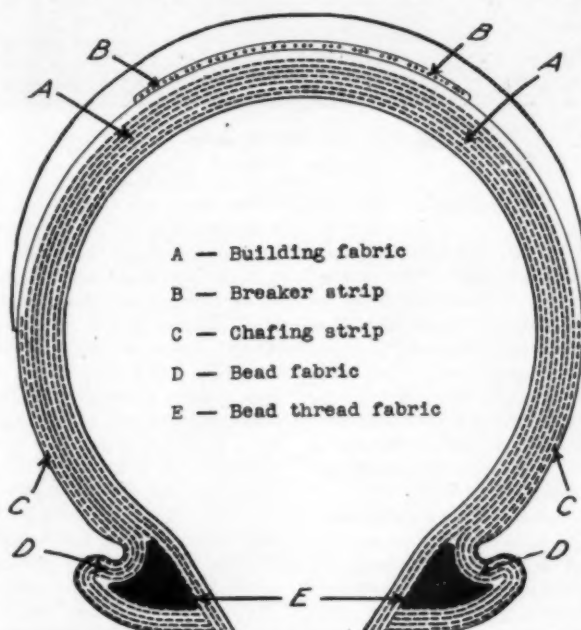
great deal of experimenting. Originally, a heavy, square-woven canvas was employed, but even when made of the very best material it failed to give satisfaction. This was particularly so when speeds increased and the weight of the cars was augmented. The ordinary square weave, with single threads in the warp and the filler, did not answer, and this was noticeably so when the successive plies were laid straight, i. e., with the warp running parallel with the circumference of the rim and the filler spanning the tire at right angles to the tread. When subjected to the varying stresses of service, one set of threads would be taut and the other slack, and, in consequence, there was a lack of cooperation.

This was in part overcome by cutting the material on the bias, and laying it on the tire core so that both warp and filler threads crossed it diagonally the texture representing a series of multiple diagonals, criss-crossing so that they pointed in the direction in which the wheel revolved. As a result, all of the threads took the stresses more nearly in line with their lengths, and offered a longer bearing surface. Also, they spanned a bigger arc, and were supported by a larger underlying volume of air within the inner tube. This meant a wider distribution of the blow or a bigger area of contact in surmounting a stone, or any other road inequality, and reduced to just that extent the chance of a bruise or rupture.

As a matter of fact, cotton thread is not inherently elastic, and it is quite apparent that a suitable tire fabric should possess this characteristic.

Army duck or square-woven canvas is devoid of this desideratum; in truth, stiffness rather than elasticity is what is commonly found in sailcloth. How, then, have the makers of tire fabrics secured strength, in the first place, out of a weak filament, and then so combined the threads that the carcass might better perform its part and approach closer to the ideal requirements for an envelope that should "bend or suffer distortion of its normal circular shape without friction or resistance other than the contained air-pressure?" The automobile tire does not perfectly meet this ideal standard, but it is a good approximate, thanks to the ingenuity of the fabric builders.

The desired degree of elasticity is imparted by a process of weaving, the threads being subjected to tension that gives to the warp and filler threads a wavy form. This is technically called "crimp." In short, the thread is virtually thus converted into a spring. It is this crimping that does the trick and provides the necessary measure of elasticity. In weaving this type of tire fabric the warp threads are given about 6 per cent more crimp than those in the filler, the purpose of this being to offset one of the consequences of calendering. As the fabric passes between the rolls, some of the crimp in the warp is always ironed out. To balance this, additional crimp is put in the warp threads at the time of weaving, and when the frictioned fabric issues from



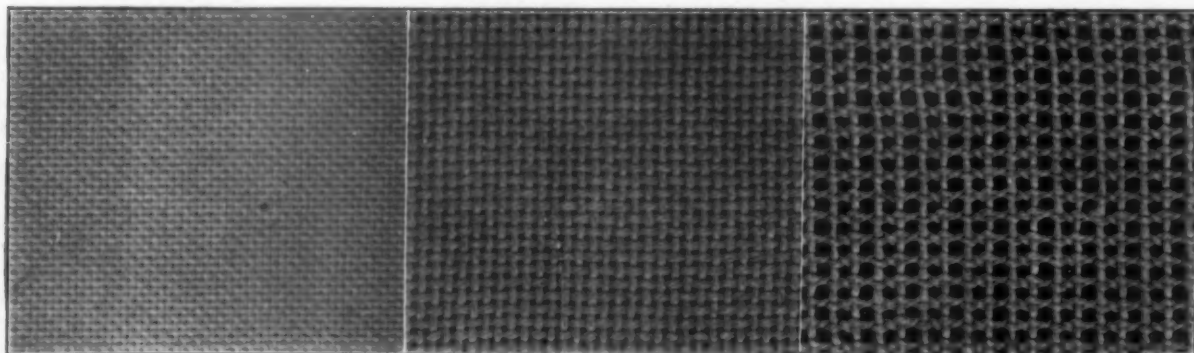
the calender the crimp of both the warp and the filler is alike.

It should be noted just here that the carcass is built, not of one type of fabric, but of several. These are the building fabric, the breaker strip fabric, the chafing strip fabric and the bead fabric.

The standard carcass fabric which has been under consideration is $17\frac{1}{4}$ ounces in weight per square yard, and is made of

cross above and below the large warp yarn in a way to lock or steady it.

The "chafing strip" is a fabric used to cover the beads and the lower part of the casing. The name is self-explanatory. The weave is square, the weight varying according to the size of tire, and the threads are crimped. In some it is an $8\frac{1}{2}$ -ounce fabric, in others $9\frac{1}{8}$ ounces, etc.



STANDARD BUILDING FABRIC,
 $17\frac{1}{4}$ OUNCES.

BREAKER STRIP FABRIC,
SQUARE WEAVE.

BREAKER STRIP FABRIC,
LENO WEAVE.

Sea Island cotton, from combed and carded Egyptian yarn, and sometimes from carded Peeler yarns.

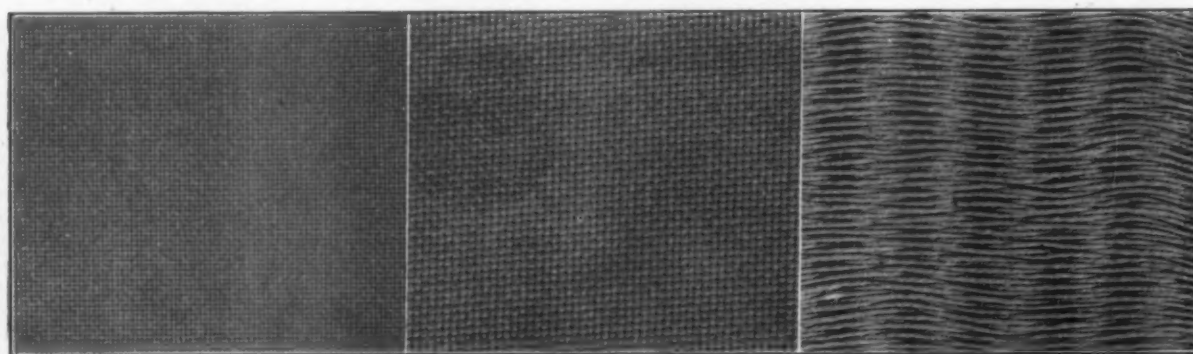
Upon the outside of the carcass is a wall of rubber, and upon this is laid what is known as the "breaker strip." The purpose of this strip is to bind the carcass and the tread intimately together; or, to put it popularly, to rivet them. The breaker strip fabric is of square weave and an open mesh composed of heavy yarn or cords, and weighing anywhere from 11 to 13 ounces per square yard. The breaker strip is a single layer, and in the best tires is made of Sea Island cotton and heavily coated with high-grade rubber. The fabric has to be strong and capable of standing up under the sidewise and the lengthwise stresses, and must support the tread of the tire effectually.

In the older style of breaker strip material, the square weave, with the open mesh, did not give the fabric stability or stiffness. It was so yielding that it could not be run evenly through the calender, and it was hard to apply the rubber coating uniformly

Tire beads are built up on a rubber core; or, in the case of a clincher tire, on a wire core, and covered with fabric. The bead is then given its proper shape by molding. The fabrics used in the beads are not standardized. However, 8 to 14-ounce fabric is recommended by many builders of reliable tires.

In addition to the regular bead fabric, what is known as thread fabric is used for tire beads. The base of this fabric is a single yarn that is twisted two-ply and reversed, and then twisted three-ply. Such fabrics used are loosely woven materials consisting primarily of single heavy warp cords held in place by widely spaced thin threads, the sole duty of which is to hold the warp in place. This fabric is calendered without regard to the fact that the threads may ride one another. The elasticity of thread fabric is increased by cabling, which means twisting with other threads, and crimping.

When thread fabrics are used for building up the carcass, which is rarely, they are proofed on a spreading machine and



CHAFING STRIP FABRIC,
 $8\frac{1}{2}$ OUNCE.

BEAD FABRIC,
14 OUNCE.

BEAD THREAD FABRIC,
8 OUNCE.

and satisfactorily. Because of this a modification was necessary, and the present improvement, called the "Leno" weave, is now extensively employed. In this fabric the warp and the filler yarns are locked so that the material resists the spreading effect of the calender rolls without distortion. There is a single heavy warp yarn running in one direction with two smaller fillers that

then cut on the bias and rolled up with liners ready for the building machine.

Thus it is seen that the fabric or fabrics of which a motor tire is formed are fully as important as the rubber. As the United States is today by far the greatest tire making country in the world, and as the promise for the New Year is for even

greater production, a look ahead at the tire fabric demand and supply is in order.

The estimated needs of the tire producers, as the trade see it, are shown in the following table, which relates to standard 17¼-ounce building fabric:

TIRE BUILDING FABRIC REQUIREMENTS FOR 1916.

	Width of Cloth.		
	48.50 inch.	54/60 inch.	72.84 inch.
Tire Company A.....pounds	10,000,000	.....	4,000,000=14,000,000
Tire Company B.....	.....	14,000,000	.....=14,000,000
Tire Company C.....	.....	8,000,000	2,000,000=10,000,000
Tire Company D.....	.....	10,000,000	.....=10,000,000
Tire Company E.....	.....	4,000,000	2,000,000= 6,000,000
Tire Company F.....	3,000,000	1,000,000	1,000,000= 5,000,000
Tire Company G.....	.....	1,000,000	300,000= 1,300,000
Tire Company H.....	1,000,000	.....	.....= 1,000,000
Tire Company I.....	.....	1,000,000	.....= 1,000,000
Tire Company J.....	.....	.....	750,000= 750,000
Tire Company K.....	.....	600,000	.....= 600,000
Tire Company L.....	500,000	.....	.....= 500,000
Other Tire Companies.....	500,000	1,500,000	.....= 2,000,000
Total	15,000,000	41,100,000	10,050,000=66,150,000

In addition to the above, the breaker, bead and chafing fabrics must be considered; and 8,850,000 pounds would be a conservative estimate of the amount required for these special fabrics. Thus a total of 75,000,000 pounds of tire fabric will be required for the production of tires in 1916.

Now as to supply, the mills devoted to tire fabrics can produce about as follows:

ESTIMATED PRODUCTION OF FABRIC MILLS FOR 1916.

No. 1 Mill	pounds	12,500,000
No. 2 Mill .....	.....	10,500,000
No. 3 Mill .....	.....	10,500,000
No. 4 Mill .....	.....	10,500,000
No. 5 Mill .....	.....	7,500,000
No. 6 Mill .....	.....	7,500,000
No. 7 Mill .....	.....	4,500,000
No. 8 Mill .....	.....	4,500,000
No. 9 Mill .....	.....	3,500,000
No. 10 Mill .....	.....	2,000,000
No. 11 Mill .....	.....	1,500,000
Total .....	.....	75,000,000

While it would appear that the supply of tire fabrics is sufficient to satisfy all demands and still have stocks to spare, a condition of actual shortage is not a remote possibility. In the event of long-continued strikes at the fabric mills, the production would be heavily curtailed, and the balance between supply and demand dangerously reduced.

However, the mills have increased their capacities anywhere from 50 to 75 per cent, and, in some cases, they have doubled their plants; which would indicate that fabric manufacturers are prepared to meet the market demands for tire fabrics.

RUBBER LINED SAFETY TIRE LOCK.

The ease with which spare tires may ordinarily be detached from the sides or rear of an automobile invites their loss, a fact which has led of late to an increased use of devices for locking the tire to the car. A new variety of this accessory has just been brought out. As the illustration shows, it is in the form of a chain, composed of stamped hardened steel links, and a cushion of rubber tubing that extends around the inside of the chain. This rubber tube prevents wear on the tire through chafing of the steel links, and also eliminates the rattle of the chain.

Besides the bracelet form shown in the cut, for attaching the tire to the rear of the machine, other styles—both for single tires and pairs—are made, with brackets of different forms to be attached to the sideboard, etc. Extra links can be added to make the chain as long as desired; and a different style of key is made for each lock. [Safety Tire Lock Co., Pawtucket, Rhode Island.]

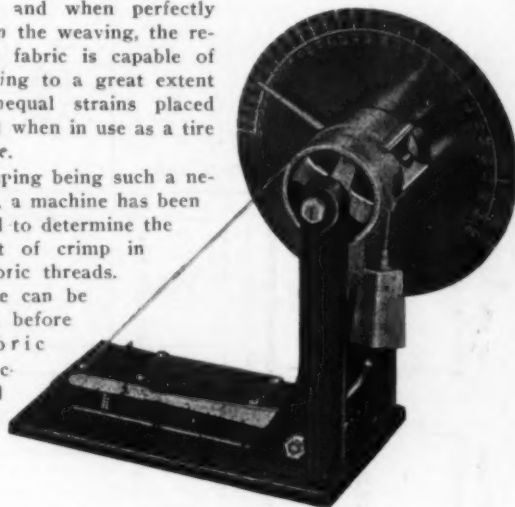


A MACHINE FOR TESTING THE CRIMP OF WARP AND FILLER THREADS.

In the making of tire fabrics and, for that matter, hose and mechanical fabrics, although in a less degree, the trick of crimping the warp and filler threads is important. This gives a certain spring to the goods, and when perfectly done in the weaving, the resulting fabric is capable of equalizing to a great extent the unequal strains placed upon it when in use as a tire or hose.

Crimping being such a necessity, a machine has been devised to determine the amount of crimp in the fabric threads.

These can be tested before the fabric is frictioned and then again after the



fabric has been frictioned and skim-coated on the calender.

The method of using the crimp tester is as follows: Mark on the fabric two parallel lines eight inches apart and cut the fabric so that the threads with the marks on them can be raveled out. Test the warp and filler threads separately. One end of the thread with the mark on it is placed exactly under the clamp on the cylinder. The cylinder is then released and the dead weight winds the thread around the cylinder until the other mark on the thread comes even with the straight edge at the bottom of the machine. The warp now presents the appearance of a straight thread and the percentage of crimp is read directly from the dial.

THE THROPP TIRE MOLD PATENT NOT SUSTAINED.

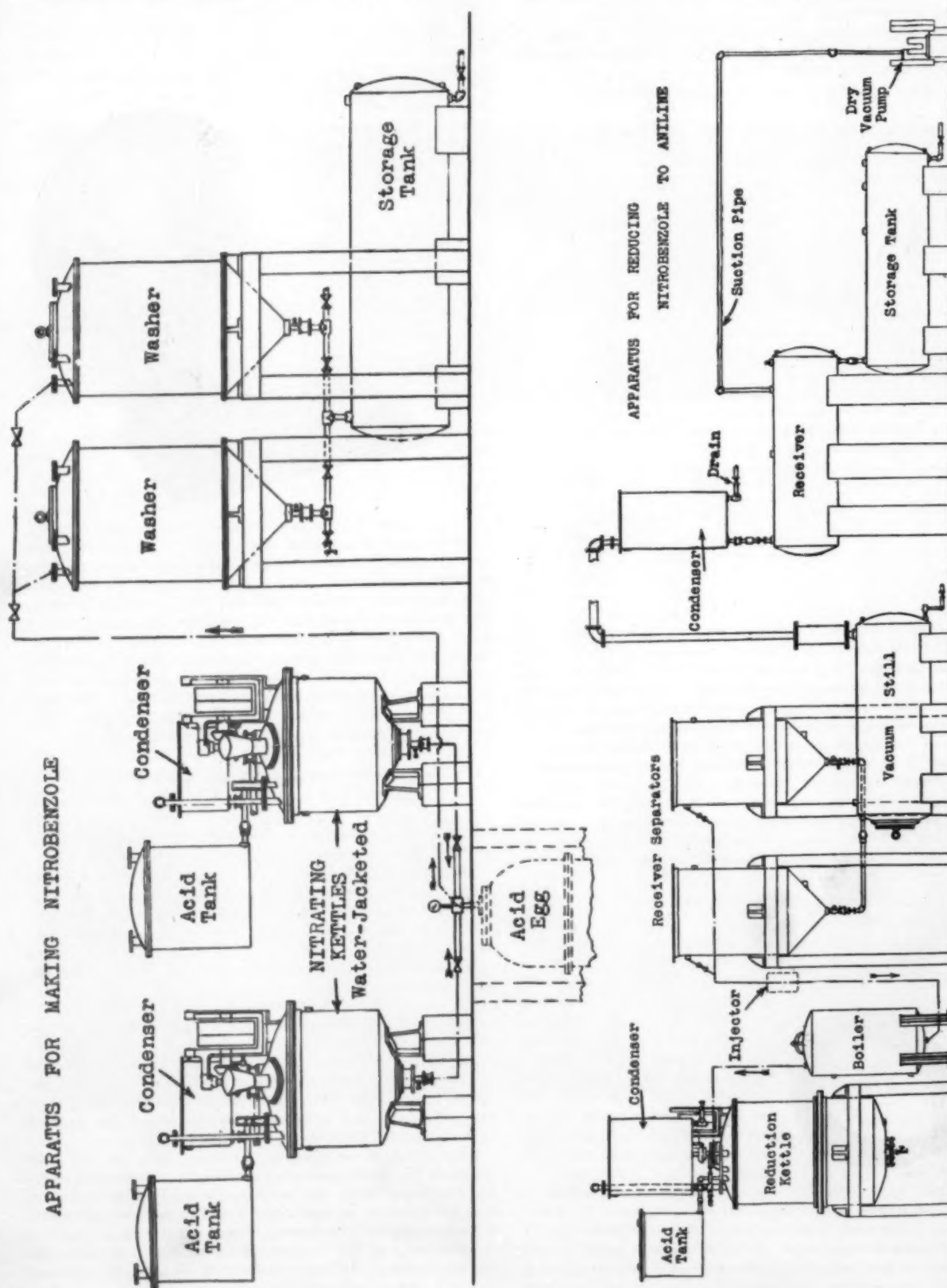
The Thropp tire core mold patent has again appeared in the courts. This time Judge Hand, of the United States District Court of the Southern District of New York, upheld the former decisions that the patent is not valid.

The action was brought by the DeLaski & Thropp Circular Woven Tire Co., against the United States Tire Co., and was really a continuation of an earlier suit in which the patent was declared invalid because anticipated, which decision was subsequently sustained by the Circuit Court of Appeals. The recent trial before Judge Hand was granted on the plea for the admission of new evidence.

The patent covers the molds generally used in building up, wrapping and vulcanizing tires, and is commonly used by tire manufacturers.

The successful defense of this case adds another to the list of notable cases won by Ernest Hopkinson, attorney for the United States Rubber Co., of which the defendant, the United States Tire Co., is a subsidiary. Mr. Hopkinson was assisted by his associate, Livingston Gifford.

Judge Hand, in reviewing the testimony, ruled that the mold books of The B. F. Goodrich Co. showed that open tire molds and double cure were used in 1905. He accepted the contention that Thropp made the molds he claimed in 1904, but ruled that neither curing nor semi-curing were practiced in any part of the tire that was not in contact with the mold. He held that Thropp's press of 1904 was antedated by the Fisk cold press of 1903 and 1904.



The Manufacture of Aniline Oil.

WITHIN the past five years the use of aniline in rubber goods manufacturing has increased to a marked degree the world over. Of late, special attention has been drawn to it by governmental investigations, as, for example, that cited in the December 1915, number of THE INDIA RUBBER WORLD on "Industrial Poisons in Rubber Manufacture." The nature, source and method of manufacture of aniline is therefore of present interest.

The chemist, Unverdorben, discovered the liquid now known as aniline in 1826, among the products of the dry distillation of indigo. In 1834 it was found by Runge in coal tar and was named by him kyanol or blue oil because it produced a blue coloration with hypochlorite. Fritsche in 1841 gave it the present name of aniline after the indigo plant anil, from which he obtained it by distilling with potash. Commercially, aniline is obtained by a series of chemical transformations, beginning with coal tar. Among the products liberated from coal tar by distillation is benzole. Benzole, when acted upon under suitable conditions with mixed nitric and sulphuric acids, is converted into nitro-benzole. Nitro-benzole may further be acted upon and chemically "reduced" to aniline oil. The illustration, for which we are indebted to the courtesy of the J. P. Devine Co., Buffalo, New York, represents, in elevation, the assembly of a modern aniline manufacturing plant. The apparatus is in two groups, each operated continuously in 8-hour shifts.

MAKING NITRO-BENZOLE.

In the nitro-benzole section there are two nitrating units alternated in service for continuous production. Each kettle has connection with an independent acid tank and both discharge their contents into the same "acid egg" or reservoir from which, by compressed air, the nitro-benzole is elevated into either of the two washers for purification, preparatory to going into the storage tank. The capacity of each nitrating kettle is, of course, the same, since they are designed to be operated alternately. This capacity should not exceed, say, 200 gallons, in order that the heat of the reaction may be safely regulated by the water jacket circulation.

The nitrating kettle is built of acid-resisting cast iron, with extra heavy walls. Mounted upon the kettle, with suitable connections to it, is a water-cooled condenser for cooling the vapors arising from the reaction and returning them to the kettle. A hopper is also provided for introducing saltpeter in lieu of nitric acid, when desired. The contents of the kettle are mixed by a mechanical agitator operated by a tight and loose pulley on a shaft bevel-gear to the vertical shaft of the agitator. In some forms of nitrating apparatus the control of the temperature is obtained by means of water circulation through a long lead coil located within the kettle.

In operation, a mixture of nitric and sulphuric acids, of specified strengths, is intimately mingled by air agitation. The mixed acid is then run into the charge of benzole in the nitrating kettle and the agitator set in motion at about 60 revolutions per minute. The heat of the reaction is not allowed to rise above 140 degrees F. This is effected by regulating both the rate of entrance of the acid and the cooling circulation in the water jacket. Agitation is continued for about 4½ hours after the final addition of acid, when the benzole has been fully nitrified or changed into nitro-benzole. At this point the contents of the kettle are allowed to settle for several hours. The waste acid goes to the bottom and is run off into the air pressure "acid egg" below, thence it is

blown to a concentrating department for rectification. The nitro-benzole is next run into the egg and transferred to one of the washers; here it is cleansed by water agitation, settled out by standing, and finally discharged into the storage tank. In practice the yield of nitro-benzole from benzole is 154½ per cent by weight. The theoretical yield is 157.6 per cent.

MAKING ANILINE OIL.

The aniline section of the plant is somewhat more extensive than the nitro-benzole part. There is an acid tank connected to the reduction kettle; also a condenser mounted upon the latter, and various connections for the introduction of the nitro-benzole and the iron borings used in the reaction of reduction. A mechanical stirrer is operated by a tight and loose pulley, bevel-gear to the shaft of the stirrer or agitator. The kettle itself is made of extra heavy cast iron, with its bottom section provided with a removable lining of special, hard and acid-resisting cast iron. This is essential for protection of the body of the kettle from the grinding effect of the mass of iron borings in long continued movement, as well as from the corrosive effect of the acid. The agitator or stirrer has a tubular shaft to permit the access of steam to the contents of the kettle.

To produce aniline, the reduction kettle is charged with nitro-benzole and, from the acid tank, diluted hydrochloric acid is next admitted, followed by a slow feed of common cast iron borings, both acid and borings being in definite proportion to the charge of nitro-benzole to be reduced. The iron borings are fed progressively, as required, and it takes several hours for the admission of the total amount needed.

The reaction having been started, distillation proceeds and the distillate entering the condenser is returned to the kettle. The materials are added to maintain a constant level in the kettle. If the reaction becomes too violent, loss is occasioned by the formation of benzene. The reduction is complete when the kettle contains only aniline oil, water and oxide of iron. The supply of steam, at this point, is increased so as to distill over the aniline oil and water, both of which are piped to the receiver separators. Here the water and aniline oil separate by standing for 48 hours. The water contains about 3 per cent of aniline oil and is removed to a boiler, located near the reduction kettle. Here it is steam-heated and passed over into the reduction kettle to save the contained aniline from waste.

The oxide of iron from the reduction kettle is dried and may be prepared for use in the purification of coal gas from sulphur, or for the manufacture of cheap black paint.

The settled aniline oil in the separators is charged into the vacuum still for purification before storage. The total yield of pure aniline oil obtained from nitro-benzole is 71¼ per cent. As pure benzole yields 154½ per cent nitro-benzole, and the latter 71¼ per cent of pure aniline oil, the total yield of pure aniline oil from pure benzole is practically 111 per cent.

Aniline oil has a boiling point of 364.6 degrees F., specific gravity of 102.65 at 60 degrees F. If sold as pure it should not contain over one-half of one per cent of water, and should be free of nitro-benzole. A delicate test for the presence of nitro-benzole in aniline oil is to shake a sample violently for a few minutes, and notice the color of the froth so produced. The merest trace of nitro-benzole present will give a very distinct yellow coloration.

What the Rubber Chemists Are Doing.

PROGRESS OF RUBBER CHEMISTRY IN 1915.

A LEADING feature of the work of rubber chemists in 1915 is the development of vulcanization accelerators. The researches which resulted in the production of synthetic rubber developed the value of certain organic chemical compounds for improving the quality of synthetic rubber and hastening its vulcanization. Organic accelerators are not indispensable to good manufacturing results and so far are practically prohibitive in price. These are, however, decidedly interesting from a chemical point of view, and have been noticed in the patent literature and in special articles in *THE INDIA RUBBER WORLD* (December, 1914, March and June, 1915).

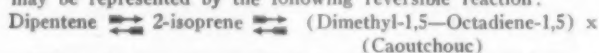
Methods of reclaiming waste have been much studied the past year and some results have been embodied in patented processes.

The published methods of analysis of vulcanized rubber perfected and issued by the United States Bureau of Standards, afford the best standard practical instructions on the subject for the rubber works laboratory. The gain in this regard is very great.

Every phase of the rubber industry, from the plantation to the finished product, is undergoing careful study and research, and knowledge of rubber is steadily increasing in consequence. Much of this new knowledge has been gathered and classified in the columns of this paper.

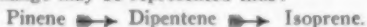
ISOPRENE FROM BETA-PINENE.

A. W. SCHORGER and R. Sayre, of the Forests Products Laboratory, Madison, Wisconsin, in the "*Journal of Engineering Chemistry*" (November, 1915), publish their researches on the production of isoprene from beta-pinene. The chemical relation between isoprene, the terpenes, and caoutchouc may be represented by the following reversible reaction:



The authors used a modified form of the isoprene lamp of Harries (See *THE INDIA RUBBER WORLD*, December, 1914, page 129) for conducting their experiments. Their results show that turpentine and beta-pinene, under the same conditions, yield about the same amount of isoprene, approximately 10 per cent. They consider that the isoprene obtained from turpentine is not due to the cracking of dipentene or limonene originally present in the turpentine, but that the isoprene results indirectly from dipentene.

Alpha-pinene can be converted into dipentene by heat; the condition in the apparatus would be favorable to such a transformation. The change may be represented thus:



It is not probable that either alpha-pinene or beta-pinene can be made to yield directly sufficient isoprene for the commercial production of rubber. Since good yields of isoprene are possible from dipentene, an attempt to obtain an approximately quantitative conversion of pinene into dipentene is worthy of further consideration.

RUBBER OF UNIFORM COLOR.

Beadle and Stevens have shown that the darkening of raw rubber is due to the presence of an oxydase. Pale rubber can be produced by coagulating with an excess of acetic acid, creping, and drying rapidly, preferably by heating in a vacuum, or by placing freshly coagulated rubber in boiling water from 10 to 15 minutes; but in both cases the product yields vulcanized rubber of inferior quality. By adding to the latex small quantities (1 part per 500 to 1 part per 1,000, or even less) of substances such as sodium bisulphate or formalin, which arrest enzyme action, pale rubber of uniform color is obtained and the treatment has no injurious effect on the vulcanized rubber.

The "Bulletin of Agricultural Intelligence" (1915, page 1064) recounts a simplified Schadt's process for preparing rubber. It consists in spreading a thin layer of latex over tin plates with curved edges. When the latex has dried, the rubber films are smoked in a revolving drum covered with perforated sheet iron, and then compressed into blocks. The cost of the process is very low, and the rubber is fit for transport two days after tapping.

PREPARATION AND PROPERTIES OF PURE RUBBER.

The investigations of F. Heim and R. Marquis on the preparation and properties of pure rubber have been published in the "Bulletin of Agricultural Intelligence" (1915, page 874). Their method was to coagulate wild Para rubber by smoke, and plantation Para rubber by acetic acid. These were purified by maceration, washing in cold water in a darkened tube and washing with acetone. When the latter had evaporated, the rubber was dissolved in ether or benzene, the solution filtered through a Buchner funnel, and precipitated with alcohol or acetone. After removing traces of benzene by digesting with alcohol, the pure caoutchouc was dried over sulphuric acid in the dark. The pure substance is white, that obtained from smoked rubber slightly yellow. Analysis confirmed the absence of resins and proteins, and the fact that pure caoutchouc is a polymer of isoprene. Solutions of it were less viscous than those of impure rubber, and the pure substance oxidized more rapidly in air than the impure, particularly when dissolved in chloroform.

TACKINESS OF RUBBER.

According to Spence, tackiness is caused by change in the aggregation of the rubber molecule and is not due to chemical change. K. Gorter finds that rubber exposed to light in sealed tubes remains unchanged when the tubes are filled with hydrogen or carbon dioxide, but becomes tacky in air or oxygen, and he concludes that tackiness is due to oxidation. In one of his experiments 3 per cent of oxygen was absorbed. Absorption of oxygen proceeds slowly for the first 6 days; it then increases and attains its greatest rapidity in about thirty days. Oxidation does not appear to be due to enzyme action, for it occurs in rubber which has been boiled in water. Aldehydes were detected in tacky rubber.

METHODS OF ANALYSIS.

DETERMINATION OF TOTAL SULPHUR IN RUBBER.—The method for determining the total sulphur in vulcanized rubber, as given by A. Hutin, consists in decomposing from 1 to 2 grams of rubber by means of 30 c.c. of fuming nitric acid, added 2 to 3 c.c. at a time. The liquid is evaporated to a syrup, made alkaline with caustic soda, and mixed with sufficient calcined magnesia to form a stiff paste, which is dried, first on a water bath and then in an air oven, at 140 degrees C., and finally ignited cautiously over a small flame so as to avoid an explosion. After ignition the mass is dissolved in hydrochloric acid and the sulphur determined by precipitation as barium sulphate in the usual way.

DRYING ACETONE EXTRACT OF RUBBER. A. Hutin holds that the acetone extract should be vacuum dried in order to obtain a residue of constant weight. Unless this is done serious errors may occur, owing to the increase in weight of the residue on drying in the ordinary way; even drying in carbon dioxide appears to be unsatisfactory.

ESTIMATION OF MINERAL MATTER IN VULCANIZED RUBBER.—A simple method for this purpose is given by H. W. Jones in "Rubber Industry," London, 1914. Two grams of the sample are heated with 40 to 50 c.c. of nitrobenzene in a 200 to 300 c.c. flat-bottom flask, connected to a reflux air-condenser. When solution of the rubber is complete, the flask is allowed to cool, the

contents diluted with acetone, stirred with a glass rod, and allowed to stand. The mineral matter is deposited rapidly and separated by decantation, transferred to a weighed filter-paper, and washed well with acetone. In some cases it is advantageous to wash further with alcohol and chloroform, then to moisten the filter with water so as to obtain a moist and uncaked residue for further examination. Little or no carbon dioxide is eliminated from calcium or magnesium carbonate by boiling for one hour in nitrobenzene.

CHEMICAL TREATMENT OF RUBBER.

UNITED STATES OF AMERICA.

RUBBER-LIKE SUBSTANCES FROM ALCOHOLS. 1,161,904. David Spence and Alexander P. Clark, assignors to The B. F. Goodrich Co.—The process consists in heating an alcoholic body (pinacone) in the presence of a dehydrating agent (acetic anhydride) at such temperature that there is yielded a rubber-like body after prolonged heating.

UNITED KINGDOM.

COAGULATION OF LATEX.—16,096 (1914). E. Mosinger. Latex is coagulated by the addition of a solution of aluminum, bismuth or zinc chlorides, or mixtures of these. About 1 gram of one or more of these salts is dissolved in 10 c.c. of water, and the solution is stirred into 100 c.c. of latex. The rubber thus prepared is said to have physical qualities which considerably improve its commercial value.

PREPARATION FOR COAGULATING LATEX. 16,840 (1915). C. de C. Pinto, Para, Brazil. A coagulating preparation consists of a solution in alcohol of preferably 2 kilos of creosote, 1 kilo of quinine hydrochloride and 1 gram of sodium carbonate, which is diluted with water or the whey of rubber latex. It is recommended that 10 grams of this solution be used with 200 grams of whey for coagulating 2 kilos of latex.

SYNTHETIC CAOUTCHOUC SUBSTANCES. 17,253 (1915). A. Heinemann.—The polymerization of butadiene, isoprene, dimethylitadiene, and other hydrocarbons having double bonds, is affected by dissolving them in acetone or one of its homologues and passing sulphur dioxide into the solution. The product is freed from oily impurities by subjecting it to high pressure in a mold. It may be vulcanized or mixed with metal oxides or other fillers.

THE GERMAN EMPIRE.

PROCESS FOR OBTAINING PURE BUTADIENE. 286,640 (April 25, 1913). Bayer & Co. "Butadiene containing gas" is treated with fluid sulphurous acid for solution of the butadiene. Subsequently purified by evaporation and caustic soda.

OTHER CHEMICAL PATENTS.

UNITED STATES OF AMERICA.

ISSUED NOVEMBER 16, 1915.

- 1,160,362. Method of making a plastic body. L. H. Baekeland, Yonkers, N. Y., assignor to General Bakelite Co., New York.
- 1,160,363. Waterproof article of manufacture. L. H. Baekeland, Yonkers, N. Y., assignor to General Bakelite Co., New York.
- 1,160,365. Method of making a paper-like product. L. H. Baekeland, Yonkers, N. Y., assignor to General Bakelite Co., New York.

THE GERMAN EMPIRE.

PATENT ISSUED (With Date of Validity).

- 288,968 (June 3, 1914). Process for manufacturing rubber substitute. Dr. Hugo Bayer, Vienna, Austria. Represented by Fr. Schwenterley, Berlin, SW 68.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 476,662 (December 7, 1914). New use of rubber in footwear. J. J. Sausett.
- 476,826 (December 22). Vulcanized fiber sole for footwear. P. Rouanne.
- 476,990 (December 8). Improved treads for elastic tires. W. Henry.
- 476,995 (May 18). Product serving to prevent the deflation of pneumatic tires. Robin du Breuil.

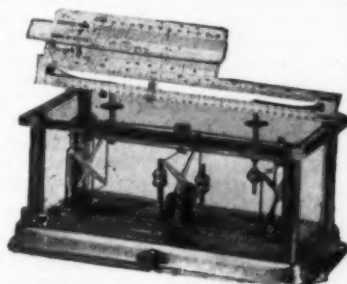
LABORATORY APPARATUS.

TORSION BALANCES FOR WEIGHT AND YARDAGE OF FABRICS.

IN every rubber factory where textile fabrics are components of the manufactured goods, as for example, those making footwear, automobile tires or proofed goods, it is a matter of constant interest and importance to keep track of fabric weights and yardage and the rubberizing upon them, expressed in weight per yard, or yardage per pound. Simple and direct means for making these determinations are available in two adaptations of the sensitive torsion balance.

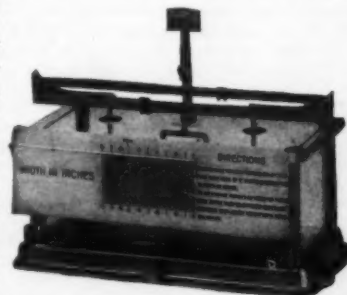
WEIGHT TO THE RUNNING YARD OF FABRIC.

The balance for determining the weight in ounces or grams of a running yard of fabric is provided with a carrier and graduated scale upon which an accurately cut sample, 2 x 2 inches, of the fabric to be tested is held in place by a wire clip. The right edge of this sample must be set exactly at the graduation on the carrier that corresponds with the width of the cloth. The scale is then brought to balance by means of the slide weight on the beam. The beam graduation thus indicated is the weight in ounces or grams of the running yard or meter of the fabric. The graduations read to the fifth of an ounce, or to five grams.



YARDS TO THE POUND OF FABRIC.

The yardage of fabric to the pound is correlative to the weight per yard and is determined by a second special balance. In this instance the sample of fabric is cut 3 x 3 inches. The right edge of the sample is adjusted exactly at the graduation on the carrier, shown in front of the scale box, that corresponds with the width of the fabric. The scale is then brought to balance by means of the slide weights on the beams. If the scale does not balance with the upper slide weight at the extreme right, then the weighing is continued with the lower weight, leaving the upper one to the extreme right. The position of the weight when the scale balances indicates the number of yards per pound of sample. [The Torsion Balance Co., 92 Reade street, New York.]

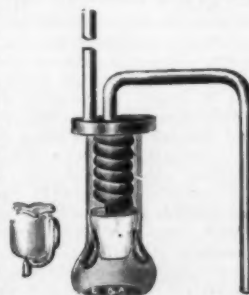


WATER SUPPLY



EXTRACTION APPARATUS.

This form of extraction apparatus is compact, simple and efficient. It is also inexpensive and durable. All rubber, cork, ground glass or mercury seal connections are eliminated. The flask is sufficiently light to be accurately weighed, is easily cleaned and of such form that



all the extract can be transferred. The condenser is entirely of metal. [Eimer & Amend, New York.]

The Marks Reclaiming Patent Sustained.

THE Philadelphia Rubber Works Co., Philadelphia, Pennsylvania, announces that the United States Circuit Court of Appeals has overruled the decision of the District Court in Ohio and affirmed the decision of the District Court in Buffalo, sustaining the validity of the Marks or "Alkali" patent, for rubber reclaiming. The importance of the case renders the decision of Judge Lacombe of great interest.

The claim upon which the patent (No. 635,141) stands reads as follows:

The described process for devulcanizing rubber waste which consists in submerging the finely ground rubber waste in a dilute alkaline solution in a sealed vessel, in heating the contents of the vessel to a temperature of 344 degrees F. more or less substantially as specified, and in maintaining said temperature for 24 hours more or less substantially as specified.

Reviewing this and the decisions of the district courts, Judge Lacombe says:

There is a mass of testimony in the record, dealing technically and scientifically with the theories as to just how the solution of the patent acts upon the rubber scrap when the mixture is heated as prescribed in the patent. It is interesting, perhaps, but of no especial importance since it is in no way helpful towards finding the answer to the simple question: what did the patentee disclose? He advanced no theory in his specifications; it was not necessary for him to do so. All that the law required of him was a plain statement of his process set forth in sufficient detail to be understood by a person skilled in the art. If the result of his process is a product which he describes as "devulcanized rubber having substantially the characteristics of fresh rubber and capable of being used in like manner and for like purpose"; and if it further appears that this is the first time that this particular process was disclosed to the world, Marks was entitled to his patent. Whether he had some theory when he applied or has one now, whether the experts have conflicting theories or not are matters of no importance.

The description of the process is couched in plain and simple language. Finely ground rubber waste is put into a vessel. This vessel itself is located in an outer receptacle capable of containing it and of being tightly closed. No special shape is prescribed for either the vessel or receptacle, they may be cylindrical or square, high or squat; it is sufficient that one shall contain the other with a space to spare between the two. Upon the rubber waste that has been put into the inner vessel there is poured a dilute alkaline solution, a three per cent solution of caustic soda being preferred. The patentee does not state the relative proportions of waste and solution, but he does give very clear and definite instructions as to the quantity of solution which shall be used. There is to be enough of the solution to permeate the finely ground rubber waste and completely submerge it. The inner vessel is then sealed up to prevent evaporation of the solution and steam is let into the outer receptacle under a pressure of 125 pounds, more or less, equivalent to a temperature of 344 degrees F. This steam-pressure is maintained for the time necessary—say 20 hours.

There certainly seems to be no obscurity about these directions. The rubber waste is to be finely ground; the patentee does not say through what size mesh its particles should pass, but it might be supposed that a person skilled in the art would know what would be the range of finely ground waste; and the art of reclaiming rubber from waste (or trying to do so) was an old one. The solution is stated to be "a dilute alkaline solution"—3 per cent of caustic soda is given as preferred—but it might be supposed that one skilled in the art would know within what limits he might depart from 3 per cent and still have "a dilute alkaline solution." Presumably all rubber waste is not absolutely identical; some may require a stronger solution than others, and it might be supposed that a person skilled in the art would know how much he should vary the strength of the dilute solution in order to obtain results with the kind of finely ground waste he was treating. Certainly the patentee's statement as to

temperature and period of steam application is quite specific. Examination of the record indicates that the suppositions above postulated as to what one skilled in the art would know about "finely ground rubber waste" and "a dilute alkaline solution" are fully warranted. There is no vagueness about the patentee's disclosure of his process.

Does it accomplish its intended result? Out of the mixture of waste and solution does there, when the process is complete, remain "devulcanized rubber having substantially the characteristics of fresh rubber and capable of being used in like manner and for like purposes?"

Defendant put his expert witness on the stand to prove a series of experiments he had made, following the directions of the patent and not producing the result which the patentee claimed. This expert had never had any experience in treating rubber; practically he was not skilled in the art. It is not infrequent in patent cases to find that experiments conducted to show that a patent lacks utility turn out as it was expected they would. Plaintiff calls attention to the statement of a witness who had had large experience in treating rubber, that by following the Marks patent exactly he had produced a fair product. This defense—inoperativeness—is usually determined by the fate of another defense—infringement. If a patented process fails to produce a fair result, it will not be used commercially. Conversely if a defendant is found to use the patented process commercially, it will be presumed that he gets a fair product by its use; and it will take more than a series of laboratory experiments to show that no such product results. Reaching as we have the conclusion hereinafter expressed as to infringement, we are satisfied that the patent sufficiently discloses a process which enables a person skilled in the art to produce the result which the patentee indicates. What is the showing of the prior art? Hall No. 19,172 states that ground rubber waste should be submitted to the "operation of boiling water in caldrons, kettles, or tanks of any description." He says that lime-water or alum can be used; but the method of using is manifestly remote from Marks. Hall No. 22,217 submits the ground waste "in a close or proper vessel to the action of steam direct upon the rubber, or in connection with water, for the space of 48 hours." This is not the Marks process. Hall 25,160 provides for placing the ground waste "in a close steam boiler or other suitable vessel, into which steam is conducted through a steam pipe. In its passage through the pipe the steam is superheated." This also is not the Marks process. It would be a waste of time to enumerate all the prior patents in the record, some suggesting one element, some another of Marks' process. We may proceed at once to the patent to Mitchell No. 395,987, January 8, 1889, which both Judge Clarke and Judge Hazel concur in holding comes nearer than any other to suggesting the process of the patent in suit. The discussion of this patent in their several opinions may be read; they reached opposite conclusions. Judge Clarke finds that it "comes very close to being, if indeed it is not, a clear anticipation of the process of the Marks patent." Judge Hazel finds that Mitchell's process "defiberized rubber waste by the use of acid and pressure and then devulcanized it by an additional step after washing out the caustic soda"; while Marks, on the other hand, "defiberized, desulphurized and devulcanized waste rubber by a single operation and in so doing achieved a different result from Mitchell." After a careful study of the two patents in the light of the discussion of them by experts and counsel, we entirely concur with Judge Hazel's conclusions. This Mitchell patent cannot be transformed from a two-step process to a one-step process merely because in an English patent (20,289 of 1889) Mitchell recommended a one-step process to be carried out by the use of other agents than those specified in Mitchell 395,987, and in Marks. In this English patent we find recommendations to use iron in the form of borings or filings, or even larger pieces, turpentine, bisulphide of carbon and naphtha. The following excerpts from the Mitchell patent 395,987 indicate to us quite clearly that Judge Hazel's construction was a correct one. After describing a process for removing fibre and mineral matter, Mitchell says:

Where the waste is unvulcanized this ends the process. * * * When, however, it is desired to devulcanize the rubber, I subject it to further treatment, as follows: Immediately after washing out the mud and

before the contents of the vessel have had time to cool I again close the cock of the blow-off pipe E and force in steam until a pressure of say 125 pounds and a temperature of 383 degrees F. have been reached, by maintaining which for a period of from 12 to 36 hours the rubber will be devulcanized.

Before the steam is thus applied the defiberized waste has been thoroughly washed first with hot and then with cold water. It is the subjection of this thoroughly cleaned waste directly to steam under pressure which, as Mitchell's patent states, "devulcanized" the rubber. We are unable to see how such a process can be held to anticipate Marks' process, or even to approach it so closely as to negative invention.

As to the defense of alleged prior uses it seems unnecessary to add anything to Judge Hazel's discussion of this branch of the case.

The only witness available to show what process defendant employs was a detective; such process being carried on in secret. We concur with Judge Hazel that his testimony made out at least a *prima facie* case of infringement. Inasmuch as defendant introduced no evidence to show either what its process was or what it was not (*Badische Anilin v. Klipstein*, 125 F. R., 543), we think infringement was sufficiently proved.

INSURING RUBBER PROFITS AND COMMISSIONS.

IT is generally acknowledged that insurance can be written covering almost every known risk. That the importer can be insured against loss of profits accruing from sales of crude rubber, and brokers protected against loss of commissions, is comparatively new to the American rubber trade.

Should an insured rubber shipment be lost in transit, the importer is protected and collects the full value from the insurance company. That is all very well as far as the value of the goods is concerned, but it does not satisfy the customer for whom the goods were bought under contract. The order must still be filled. In the meantime something may have sent rubber prices sky-rocketing and the importer is obliged to fill his contract with rubber purchased at a higher price, resulting in a substantial loss instead of the expected profit.

To guard against this he insures his importation at an increased price over the value of the goods or, in other words, insures his profits. So, too, the rubber broker insures against loss of commissions due him on shipments of rubber in transit that may never reach their destination.

If rubber manufacturers could also insure themselves against loss in manufacture, such as blistering, over and under cure, general damage in making up, etc., as well as against claims for wear, returned goods and adjustments, the insurance cycle would be nearly complete.

CRUDE RUBBER AS PASSENGERS' BAGGAGE.

Some idea of the desperate straits to which Germany has been reduced by the British rubber blockade was obtained when a search by members of the neutrality squad of the United States secret service, of the baggage of a woman passenger to Holland on the steamer *Ryndam*, revealed the presence of nearly 3,500 pounds of crude rubber. It was subsequently learned that the rubber had been purchased through a dealer in New York, by agents of the rubber department of the Deutsche Bank, Berlin, a government institution. Its purchase and shipment were in accordance with a scheme worked out by one Max Jaegar, an accredited agent of the bank, which, with the arrest of Jaegar and the *Ryndam's* passenger, has been nipped in the bud. The offense with which the prisoners will be charged is failure to manifest goods exported to foreign lands in the course of trade, for profit. It is asserted that had the first shipment been successful, other passengers with similar consignments would have followed at regular intervals.

CONTRABAND RUBBER SHIPMENTS BY PARCEL POST.

THE seizure by British authorities of parcel post mail, on steamers flying the flag of a neutral nation, has caused many protests against this interference with the sacredness of the mails as guaranteed by international postal conventions to which Great Britain is a party. This is not, however, the main question involved.

When the rubber manufacturers of the United States undertook, in consideration of being supplied with plantation rubber from British possessions, to guarantee that such rubber, either crude or in manufactured form, should not pass into the hands of an enemy nation, the engagement was accepted in good faith by Great Britain. Under the circumstances, it would have been a breach of faith on the part of those who had signed the guarantees to connive at or close their eyes to deliberate attempts to evade the agreement. And, moreover, the discovery that rubber in considerable quantities was being thus diverted might cause an immediate re-establishment of the "embargo," with effects on the American industry that can readily be imagined.

A profitable traffic in shipping by parcel post is undeniable, when rubber bought in New York at approximately 80 cents per pound is sold in Berlin at \$12 per pound, at a cost for transportation of 12 cents for 11 pounds. The protest against the seizure of the parcel post rubber no doubt emanates from those engaged in this profitable business.

RESULTS OF THE INTERDICTION OF RED CROSS RUBBER SUPPLIES.

The refusal of the British to allow the shipment of rubber goods for hospital purposes to Germany and Austria, referred to in the last number of *THE INDIA RUBBER WORLD*, is already bearing fruit. Miss Emma Duensing, a young woman of German birth, a graduate in nursing of the German Hospital, New York, who had served six months in Porto Rico, during the Spanish-American war and a year in the Philippines, as a volunteer nurse, lost her life while nursing the wounded at Oppelin, Silesia. Miss Duensing contracted septic fever, it is believed as a result of lack of the protection rubber gloves would have afforded her in handling an infectious case.

MUCH LITIGATED RUBBER.

An interesting case, in which the price of imported rubber figures, was recently decided by the Appellate Division of the Supreme Court in New York. The Mansfield Tire & Rubber Co., Mansfield, Ohio, contracted to purchase from Rossbach & Bros. 24 tons of brown crepe at 98 cents, and 9 tons at \$1.05 per pound, delivery to be made monthly from the date of contract, August, 1912, until September, 1913, on requisition. The price of rubber increased materially and the rubber company claimed that deliveries were not made as required and that the sellers sought to change the terms of payment, to which they would not consent. Deliveries then ceased until the following May, when the price of rubber declined heavily. The rubber company then refused to accept tenders of the rubber made at the contracted price, on the ground that the contract had been violated by previous non-delivery of the goods by Rossbach Bros. Thereupon the latter firm brought suit against the rubber company for \$34,226, in the Supreme Court, New York, claiming that this represented the difference between the contract price of the rubber and the price they had eventually been compelled to accept for it, viz., 47 cents per pound. After a trial that lasted a week, during which the facts and evidence were fully presented by each side, the jury brought in a verdict in favor of the rubber company, with costs against the plaintiffs, on the ground that the plaintiffs had broken the contract when they failed to deliver the rubber.

The plaintiffs carried the case to the Appellate Division, which affirmed the verdict of the inferior tribunal.

New Goods and Specialties.

LEWIS "NOJAE" RUBBER RETAINED AUTO CLOCK

IF an automobile clock is to prove a reliable timepiece and not a mere ornament, it must be very securely encased to prevent all danger of jarring or vibration. Rubber is the ideal casing, as it absorbs vibration, is non-conducting and therefore keeps the clock free from the effects of any electrical disturbance. The heavy red rubber casing fits firmly around the clock, which is attached by drilling holes in the dash at a distance matching the stationary bolts attached to the steel plate embedded in rubber. A special style for Ford cars is also made. Seneca G. Lewis, general manager of the Pennsylvania Rubber Co., is the inventor.

[Pennsylvania Rubber Co., Jeannette, Pennsylvania.]



THE "AUDUBON" UMBRELLA HANGER.

Umbrellas invariably rust out at the peak; they are always falling down, or, if left with others in an umbrella stand, they are injured by rubbing against them, if not actually torn by the peak of an umbrella carelessly placed in the stand. The "Audubon" umbrella hanger is a simple and convenient device, which provides a rubber holder in which the peak of the umbrella is inserted, and a ring in the top of the holder to hang upon the closet hook, as shown in the accompanying illustration. The umbrella hangs in an inverted position, thus preventing the ends of the frame from catching on clothing. The holder protects the umbrella, as coats are protected by coat hangers and shoes by shoe trees, and its life is, therefore, greatly prolonged. [The Cantine Co., Inc., New York.]



A CONVENIENT MUCILAGE APPLIER.

The B & S mucilage applier is a very modern device, designed to prevent the petty annoyance and waste of material incidental to the use of mucilage pots or paste jars. It is made of hard rubber, 5 inches long, 1 inch wide and $\frac{3}{4}$ of an inch thick. Slight projections on both sides, at each end, keep it off the paper if laid down carelessly. The soft rubber tongue at one end bends back as it



is pressed against the surface to be gummed, uncovering an opening in the hard rubber underneath and allowing the mucilage to flow. It has a pneumatic feed, a slight pressure on the sides accelerating the flow when desired. As the tongue is lifted from the paper it springs back into place, stopping the flow and sealing the opening like a cork. To refill, it is only necessary to unscrew the cap at the other end and screw on a collapsible tube of mucilage, reversing the operation after squeezing the mucilage out. If it is desired to carry the applier in the pocket, a hard rubber cap is supplied. [Sengbusch Self-Closing Inkstand Co., Milwaukee, Wisconsin.]

THE CAMDEN WATERPROOF COAT.

Automobiling clothes have reached a high point of combined comfort and good looks. They are no longer clumsy or inelegant, yet they excellently serve the purpose for which they are intended. The black Para rubber-coated garment in the first illustration has elastic cuffs at the sleeves and a drawstring at the neck, affording the absolutely close protection needed against driving rain and that aggravating kind of snow which sifts gently in at the smallest opening. The coat fastens with clasps, folding over, double-breasted fashion. The length is 52 inches, and it is supplied in three sizes and three weights, for both men and women, and is folded in a compact rubber bag. Its eminent suitability as a fishing coat also will be readily seen.



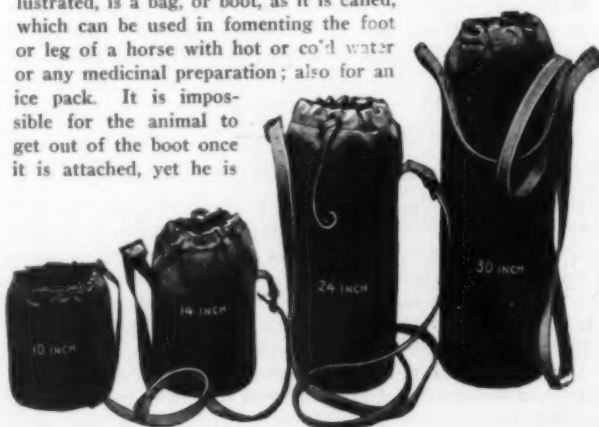
The rubber apron shown in the second illustration thoroughly protects the clothes when washing the car or doing

the unavoidably dirty work about a garage. It is black in color, and is strongly made, to suit its utilitarian purpose. This apron is supplied in light, medium or heavy weights, 44, 46 or 48 inches in length, the width being about $34\frac{1}{2}$ inches. [The B. F. Goodrich Co., Akron, Ohio.]



SOAKING AND POULTICING BOOTS FOR HORSES.

A great majority of equine ills are due to foot and tendon troubles, and it is no easy matter to attend to these ailments properly. A thoroughly practical aid in their treatment, here illustrated, is a bag, or boot, as it is called, which can be used in fomenting the foot or leg of a horse with hot or cold water or any medicinal preparation; also for an ice pack. It is impossible for the animal to get out of the boot once it is attached, yet he is



able to move about the stall without annoyance and requires little attention.

In the three larger sizes there is a valve, placed near the bottom, through which the water is released before removing the boot. A narrow strap gathers the soft top of the boot tight to the leg, preventing the radiation of heat when hot water is used; but if it should become too cold, some of the water may be al-

lowed to escape through the valve and the temperature may be raised by the addition of more hot water.

These boots are 6, 8 and 10 inches in diameter and range in height from 10 to 30 inches. They are made of heavy canvas with an increasing number of plies toward the bottom, to above the top of the hoof, and have an inside lining and an outside covering of rubber. In addition there is a removable reinforcing bottom which protects the boot in case it should be necessary to soak the foot without removing the shoe. Canvas and rubber straps are used as fastenings, the strap on the three larger sizes passing over the animal's back, while the small-sized boot fastens above the fetlock. [Voorhees Rubber Manufacturing Co., Jersey City, New Jersey.]

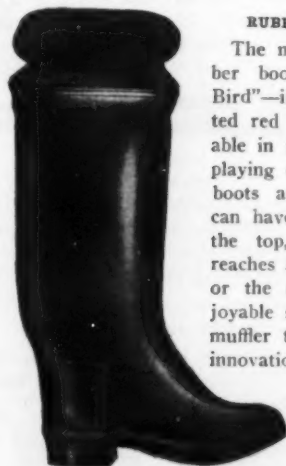
AUTOMOBILE STEERING WHEEL.

An improvement on the ordinary steering wheel for automobiles is one made of Condensite, a product which comes



very close to being synthetic hard rubber. The edges are notched, which prevents the hands of the driver from slipping. The wheel is jet black and finely polished similar to that of hard rubber, and the manufacturers claim that it retains this appearance; also, that it is very elastic, and will

not crack on the spider. [Essex Rubber Co., Inc., Trenton, New Jersey.]



RUBBER BOOTS WITH MUFFLER TOP.

The novel feature in this child's rubber boot—pleasingly named the "Red Bird"—is the muffer top, made of knitted red wool and as cosy and comfortable in feeling as it is in looks. When playing out in the snow or wet, rubber boots are the best protection a child can have. But cold winds can enter at the top, and—if youthful enthusiasm reaches a high enough pitch—even snow, or the aftermath of a particularly enjoyable splash in a puddle. The woolen muffer top is therefore a very practical innovation for that friend of children's playhours, the ever-useful rubber boot. [Canadian Consolidated Rubber Co., Limited, Montreal, Canada.]

INDOOR EXERCISING APPARATUS.

The horizontal exercising bar here illustrated is provided with rubber cushions at each end. When the bar is fitted into a doorway and turned with the hands it makes a wedgelike contact between the rubber and the sides of the doorway sufficient



to sustain the weight of a heavy man. The bar is made of selected hickory, and has steel tubular ends into which the iron sockets holding the rubber cushions screw. It is used for chinning exercises and also for abdominal work, being adjustable to any height. [A. G. Spalding & Bros., New York.]

Another indoor apparatus for athletic exercise, in which rubber is used, is a vaulting pole of bamboo, wound at short intervals with friction tape. [Wright & Ditson, Boston, Massachusetts.]

TRIPLEXED STEAM HOSE.

A new hose, that combines the flexibility of rubber hose and the resistibility to pressure of the all-metal hose, has lately appeared on the market, and is of interest to steam users.



It is built as follows: The metal inner tube is of special ball-bearing construction, overlaid with a magnesia composition, around which is spun a woven insulated fabric, covered by a coating of rubber with a woven jute covering for protection.

The metal tube carries the pressure, while the magnesia is to prevent heat conduction, and the next layer is for insulation. The woven fabric prevents kinking of the hose by being woven to the maximum bend that the hose will describe—the smallest circle that may be permitted without strain. [Metal Hose & Tubing Co., Brooklyn, New York.]

RUBBER MAT FOR REVOLVING DOOR.

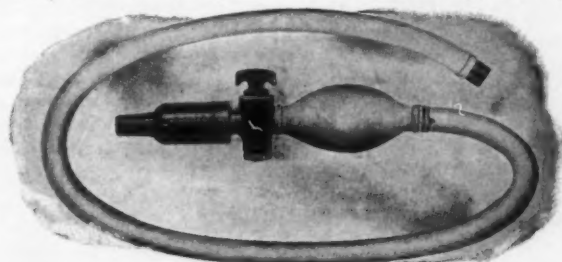
This rubber mat is specially designed for use with revolving doors, and can be obtained in any size by giving the diameter of the circle required, the size of the center post on which the door revolves, and the distance from the center post to front and back. It is made in four sections. The front and back sections are perforated, and the two side sections are made of solid rubber, which gives additional weight to the mat and insures an absolutely safe foothold when passing through the door.

[New York Belting & Packing Co., New York.]



ALL-RUBBER SIPHON.

In transferring liquid from a cask with a piece of hose or tubing, the air must first be expelled before the flow commences. The old method of starting the flow by inserting the hose in the liquid and sucking on the other end is of course a very unsanitary one. The labor, the waste of material, and, most im-



portant of all, the lack of hygiene in this method can readily be seen. All these undesirable factors are eliminated by a modern device called the "Queen City Siphon," in which a rubber bulb at the end of the tube performs the necessary service. Two compressions of this bulb will start the flow, which can be in-

stantly stopped and started again by turning the hard rubber stop cock. The construction is simple and there are no metal valves to clog, corrode, or otherwise get out of order. These siphons are made in four sizes, the flow varying from $\frac{1}{8}$ of an inch to 1 inch. [The Schaefer Rubber Co., Cincinnati, Ohio.]

THE MONARCH ADJUSTABLE AUTO LAMP DIMMER.

City ordinances require that the glaring headlight on automobiles be subdued, and this requirement has brought on the market many types of "dimmers" in the form of opaque shields covering half the light. A practical device for this purpose, which can be attached to the lower or upper part of the lamp, is shown herewith. The shield is made of strong, rubberized cloth, to withstand the rains that drive in upon it. A coil spring gripping the lamp holds the dimmer in place in spite of the constant jarring of the machine. This dimmer is made in five sizes, to conform to almost any size or style of lamp. [The Monarch Carriage Goods Co., Cincinnati, Ohio.]



THE "HELTITE" SHAVING BRUSH.

Every man who shaves himself has no doubt experienced the uncomfortable sensation brought about by the lather running down his wrist from the brush. The shaving brush here illustrated prevents this annoying occurrence by means of a drip cup made of pure rubber, which surrounds the brush at its base. The handle is suitably shaped so that the brush can be placed in a standing position. The ferrule is made of aluminum. The manufacturers claim that the specially-made lather brush is the only one that will both spread the lather and rub it in at one operation; also that the ferrule and handle will not swell, shrink, crack or loosen.

The many practical features of this useful article will appeal to every man who shaves himself. [Heldtite Brush Co., Inc., Troy, New York.]



AN ELECTRIC CLEANER WITH A SOFT RUBBER BRUSH.

Rubber has lately been made use of in improving the almost indispensable vacuum cleaner. The Premier is an electrically driven cleaner, very compact and light, weighing only nine pounds. Bristle brushes are generally used to stir up lint and dust, but in this machine the lint, hairs, etc., are picked up from the floor by a revolving brush made of rubber and metal, the rubber being in the form of little fingers. These rubber fingers just touch and loosen hair, lint, thread and ravelings which could not be removed by suction alone. After loosening, this material is carried into the dust-proof bag by the strong air current. [The Franze Premier Co., Cleveland, Ohio.]



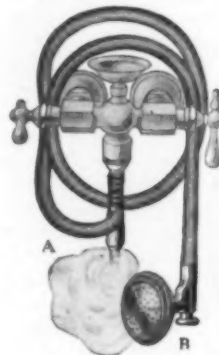
THE MCCORMICK WEATHERSTRIP.

This is used on an automobile windshield, and is claimed by the makers to eliminate all danger that cold wind, rain, hail or sleet may find its way through the space between the upper and lower panes to the occupants of the car. It is designed to fit the upper edge of glass on the lower section of the windshield.

The single flange, or lip, is forced against the outside face of the upper glass, as the shield is brought in a vertical position, and a water-tight connection is thus established between the panes. Or, if it is desired to have the upper glass swing forward freely, the strip holds equally tight on the inside. A light pressure of the thumb adjusts the strip, and it is removed with corresponding ease. When not in use it can be coiled and placed in the door pocket, under the seat, or in any other place where it will be out of the way and yet readily accessible. [The Robinson Manufacturing Co., Louisville, Kentucky.]

THE WATROUS BATH FIXTURE.

In the bath spray attachment here illustrated it is possible to adjust the volume and temperature of the water as desired before



it is released from the spray. The water flows through a relief valve *A*, which prevents all danger of the hose blowing off and insures a uniform flow. It is kept from passing through the spray by a regulator *B*. When properly adjusted, a slight pressure of the thumb at *B* starts the spray, the relief valve *A* closing automatically. This fixture is easily attached to any bathtub, and a fountain syringe attachment is also supplied, which can be interchanged, as desired, with the bath spray head. [The Watrous Company, Chicago, Illinois.]

PNEUMATIC PENHOLDER.

The special feature in this latest addition to a well-known line of pneumatic penholders lies in the extra length of the pneumatic rubber tip, which extends over half the length of the holder. "Writer's cramp" is a common ailment among constant wielders of the weapon accredited mightier than the sword. The

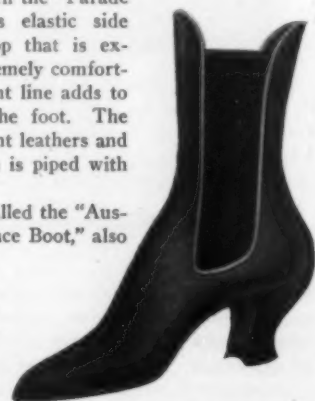


device of a heavy, soft, pneumatic rubber cushion for the fingers greatly lessens the strain and, consequently, the danger of ill effects from long continuance of a certain position of the hand. The rubber cushion on this penholder is a veritable pneumatic air cushion, made by a patented process. [American Lead Pencil Co., New York.]

SHOES WITH ELASTIC SIDE GORE.

Among the manifold novelties of a season of fascinating footwear, several manufacturers are showing boots in which a side gore of silk elastic is used. In the "Parade Boot," here illustrated, this elastic side gore gives a close-fitting top that is exceptionally neat and yet supremely comfortable, while the unbroken front line adds to the slender appearance of the foot. The "Parade Boot" comes in patent leathers and colored kid. The one shown is piped with white kid.

A dancing boot for men, called the "Austrian Officer's Full Dress Dance Boot," also makes use of the convenient silk elastic side gore. This boot does not slip at the heel in dancing, like the ubiquitous pump, and cannot bind the instep like the laced Oxford. As a rule, men's dancing shoes are notably lacking in comfort, and this boot should prove a popular innovation.



The Editor's Book Table.

CHEMICAL TECHNOLOGY AND ANALYSIS OF OILS, FATS AND Waxes. By Dr. J. Lewkowitch, M.A., F.I.C. Fifth edition. Macmillan & Co., Limited. London, 1915. [3 vols., cloth, 8vo, 483, 688 and 944 pages. Price, \$6.50 per volume.]

THIS book deservedly stands in high esteem among chemists, and its author is an acknowledged authority on the subject of oils, fats and waxes. The plan of the work is progressive.

The first volume begins with the classification of oils, fats and waxes, and discusses their physical and chemical properties, followed by a chapter on saponification, and one on the various series of fatty acids, and the series of alcohols derivable from fats. Preparation of fatty matter for physical and chemical examination, and the application of these methods, occupy the next four chapters, both quantitative and qualitative methods being given. Methods for the examination of mixed fatty acids occupy a section of 80 pages, succeeded by chapters on examination of unsaponifiable matter; detection and determination of rosin. The first volume concludes with the application of the methods to the systematic examination of oils, etc., and a discussion of examination by strictly scientific methods.

The second volume is devoted to the technology of the natural oils, fats and waxes, taking up the commercial preparation of the raw materials used in those industries, the methods of refining them and detecting adulterations. In this section the oils are classified as vegetable and animal; and so also are the solid fats and waxes.

Each oil, fat or wax is treated individually in the sub-division of its proper group, where its characteristics are indicated, its properties fully discussed, tests given and commercial value indicated. In this part are descriptions of the rubber seed oils from *Manihot*, *Funtumia* and *Hevea* rubber tree seeds. These are all classed as drying oils. The *Hevea* seems to be the most important source of rubber seed oil. "Since the productive plantations in the East have become very extensive, a larger supply of seeds is available and their export for purposes of oil production may increase, especially so as the vitality of the seeds for production of seedlings is very feeble. * * * It is estimated that one ton of kernels [414,400 seeds] delivered in England would cost £6 10s. [\$31.60]." The cake would be unsuitable for cattle feeding, and would have to be used as manure. These figures do not seem to indicate that *Hevea* seed oil may be expected to become an extensive article of commerce.

The third volume takes up the consideration of the technology of manufactured oils, fats and waxes, and commercial examination of the products of the oil, fat and wax industries; concluding with the technology of waste oils, fats and waxes and the commercial products derived from them. Under the first division are considered the industries having for their object the refining of oils and fats, and their application to commercial use; as, for example, edible oils, illuminating oils, paint oils and lubricants. Next follows consideration of the industries in which the glycerides undergo a chemical change, but are not saponified, namely, polymerized oils, boiled oils, oxidized oils, vulcanized oils or rubber substitutes, etc. In the latter instance the processes of manufacturing both the dark substitute and white substitute are given in general terms.

The candle, fatty acid, soap and glycerine industries are similarly treated. The technology of waste oil products is important and interesting. These products are chiefly greases.

The set of three volumes is fully indexed in the third and last volume. This work on oils, fats and waxes is a valuable work for any chemist's library, especially to the rubber works chemist, who is often called upon to examine oils and products containing oils used in rubber goods manufacture.

CHEMICAL CALCULATIONS. BY R. HARMAN ASHLEY, Ph.D., New York. D. Van Nostrand Co., 1915. [Cloth. 8vo, 276 pages. \$2.00 net.]

The author, in his preface, states that this text-book on Chemical Calculations follows more closely than usual the needs of students who will later find occupation in chemical laboratory work. The book, therefore, contains constant reference to chemists' handbooks, particularly to "Van Nostrand's Chemical Annual for 1913." It will be found a valuable source of help by practical chemists and laboratory analysts in their routine work. The text-book is entirely mathematical, the problems treated relating to ratios, approximate numbers, interpolation, heat, specific gravity, gas calculations, calculations of atomic weights and formulae, gravimetric and volumetric analysis and the use of specific gravity tables and acid calculations.

TRADE DIRECTORY OF CENTRAL AMERICA AND THE WEST Indies, 1915. Published by the Department of Commerce, Washington, D. C. [Cloth, 8vo, 255 pages.]

Printed in legible type in well-arranged and not overcrowded pages, and neatly bound in dark-red buckram, this work was compiled in the Bureau of Foreign and Domestic Commerce of the Department of Commerce from information supplied by United States consular officers. It is a directory of Central America and West Indian buyers and is a supplement to the Trade Directory of South America, published by the Department in 1914. Classification is according to countries, principal cities and trading centers, and the nature of the goods handled, with index and classification schedule and concise notes regarding the location, population, transportation facilities and exports of each point. It is easy of reference and should be a valuable addition to the library of every manufacturer, merchant or exporter doing business with these countries. Copies are obtainable, at 60 cents each, from the Superintendent of Documents, Government Printing Office, Washington, D. C.

THE RUBBER INDUSTRY OF THE AMAZON, AND HOW ITS Supremacy Can Be Maintained. Based on the experience of Joseph F. Woodroffe, author of "The Upper Reaches of the Amazon"; edited and with additions by Harold Hamel Smith, editor of "Tropical Life." John Bale, Son & Danielsson, Limited, London. 1915. [8vo, 435 pages, with statistical tables and 48 illustrations.]

The authors of this compilation of interesting and valuable information on the Amazon rubber industry are abundantly qualified in knowledge and experience to speak with authority.

How Brazil's supremacy can be maintained when she has occupied second place as a rubber producer since 1913, is puzzling, to say the least; however, many potential theories are advanced whereby Brazil's rubber supremacy may be ultimately regained. The book in general is an earnest appeal for the development, preferably by English capital, of the languishing Amazon rubber industry along the practical lines suggested and supported by many facts and figures.

The labor question, as it should, occupies the first place and is treated with the careful consideration due this subject, upon which the success of tropical ventures invariably depends. The natives are to be encouraged to greater effort, that will result in better laborers, rubber tappers and planters of food-stuffs. Large numbers of Japanese, Chinese and Siamese agriculturists must be imported to form colonies and intermarry with the natives to produce the new blood and sinew that are so urgently required.

The pages devoted to the history and description of the industry from the early days of the *seringas* of the aborigines to the present-day methods of collecting the milk and the preparation of modern *pelles* of upriver fine rubber are particularly accurate and interesting.

The *Seringuero* is quite the most heroic figure in all that vast land of jungle and river. The reader is brought in close touch with his humble home, his daily life and the unequal struggle that he is constantly waging against overwhelming odds in his effort to make a living for himself and family. The government does little or nothing for this intrepid and deserving type, that will in time entirely disappear unless healthy surroundings and better conditions are provided for their welfare. How this should be done is told in the chapter on "The Future Homestead of the *Seringuero*" in a convincing and practical manner that leaves little to be said on the subject of Brazil's salvation. The last chapter is an excellent review of the common interpretation of the Monroe Doctrine from the British viewpoint, and its adverse effect on Latin American trading possibilities.

NEW TRADE PUBLICATIONS.

THE Quaker City Rubber Co., Philadelphia, Pennsylvania, issue catalog No. 17, covering their mechanical rubber goods, prefaced with a modest introduction in relation to the magnitude and complete modern equipment of their plant. Glancing over the 180 artistically printed and profusely illustrated pages of this handsome publication, it would seem that the company's productions cover a most complete line of mechanical rubber goods. In the line of packings the assortment is notably complete, the description accompanying each variety being highly instructive and interesting; neatly bound, with a frontispiece in color, showing the company's extensive plant, also front views of its branch stores in New York, Chicago, Pittsburg and Philadelphia.

Wearing Candee Rubbers, conspicuously displayed and flaunting a banner with the legend, "Candee Kids," two rosy-cheeked youngsters on a flying sled, announce the Candee Rubbers in a very appropriate and artistically printed standing card, sent out as a seasonable reminder by the United States Rubber Co., Fifty-eighth street and Broadway, New York. Accompanying it is a standing figure of a typically rubicund and rotund Santa Claus, bearing, as an appropriate gift for the young folks, a "Unika" brand St. Nick. rubber boot, which, with its red moire shaft, in delightful contrast to the shining black foot, would captivate any youngster of either sex.

"Saving Dollars on Truck Tires" is the title of a series of eight interesting and instructive bulletins recently published, in folder form, by the Goodyear Tire & Rubber Co., Akron, Ohio. The first covers the subject of truck tire conservation and abuses that must be guarded against to obtain big mileage. The other bulletins are devoted to simple precautions against the following: Overloading, Speeding, Car Tracks, Rough Roads, Neglected Cuts, Non-Skid Devices, and Wheel Irregularities.

A UNIQUE ADVERTISEMENT.

Through the courtesy of A. W. Smith, western representative of the Goodyear's India Rubber Selling Co., Chicago, Illinois, we are able to present a reproduction in full size of a hard rubber

disc, issued in 1863, as an advertisement by the Rubber Clothing Co., 347 Broadway, New York. The reverse side of the disc bears, in relief, a complete calendar for that year; but although perfectly preserved and to sharp eyesight quite clear, the figures are so minute that their reproduction in natural size was not possible.

The little rubber "card," of which there is hardly likely to be another in existence, was in its time doubtless a unique and highly prized advertising novelty.



APPROPRIATE AND ARTISTIC HOLIDAY GREETINGS.

WE were agreeably reminded of the near approach of the holidays and the opening of a new year, by the appearance, on the editorial desk, of useful and attractive objects, in infinite variety, from friends desirous of expressing kindly remembrance. For these reminders, which we enumerate below, we take this means of expressing our thanks and our collective and cordial reciprocation of the good wishes with which these many attractive and enduring forms of greeting are accompanied.

SOUVENIRS AND NOVELTIES.

A handy wallet of rich brown leather, stamped in gold with the sender's compliments, comes to us from the Monatiquot Rubber Works Co., manufacturers of reclaimed rubber, at South Braintree, Massachusetts. Accompanying the gift is an appreciative greeting, on a neatly printed card displaying the company's trade-mark.

"Vac," in the person of a jet-black Boston bull terrier, comes with the season's greetings from the Pennsylvania Rubber Co., Jeannette, Pennsylvania. "Vac" probably derives his name from the Vacuum cup tires, made by his donors, and will make an attractive paper weight for any desk, besides serving as a reminder of the sender's good wishes for 1916.

Accompanied by a note of greeting and explanation, the Standard Emarex Co., New York, distributed to its friends and customers a miniature rubber tire paper weight, packed in an attractive box. The stock used in the paper-weight tire is described as containing 50 per cent of M. R. X., the mineral rubber which the company manufactures, and the specimen is sent out to show how admirably M. R. X. combines with rubber.

CARDS AND CALENDARS.

S. Birkenstein & Sons., dealers in scrap rubber, Chicago, Illinois.

E. H. Clapp Rubber Co., manufacturers of reclaimed rubber, Boston, Massachusetts.

J. W. Coulston & Company, importers of chemicals, New York City.

The J. H. Day Company, mixers for rubber compound, Cincinnati, Ohio.

Dominion Rubber System of Canadian Consolidated Rubber Co., Ltd., manufacturers of rubber goods, Montreal, Canada.

Gibney Tire & Rubber Co., wireless solid tires, Conshohocken, Pennsylvania.

Kelly-Springfield Tire Co., manufacturers of tires and tubes, Akron, Ohio.

L. J. Mutty Company, rubber cloths and tubing, Boston, Massachusetts.

New Jersey Rubber Co., Lambertville, New Jersey, dealers in all kinds of reclaimed rubber.

The Portage Rubber Co., manufacturers of tires, Akron, Ohio.

Quaker City Rubber Co., manufacturers of Quaker tires and mechanical rubber goods, Philadelphia, Pennsylvania.

DRY COST CALCULATOR.

The Acushnet Process Co., New Bedford, Massachusetts, issue a very neat dry cost calculator for crude rubber. By its use the net cost of crude rubber, up to \$2.50 per pound, can easily be ascertained at a single setting on the instrument of the purchase price and percentage of shrinkage. The instrument is circular, of heavy celluloid and may be obtained gratis by representatives of rubber companies on application.

New Machines and Appliances.

BIRMINGHAM PNEUMATIC TIRE TREAD MACHINE.

THIS machine is of special interest to tire manufacturers, as it turns out treads superior to the hand-laid product, and at a lower cost. Another advantage is in its adaptability for laying up inner flaps—an item which is very large in some mills.

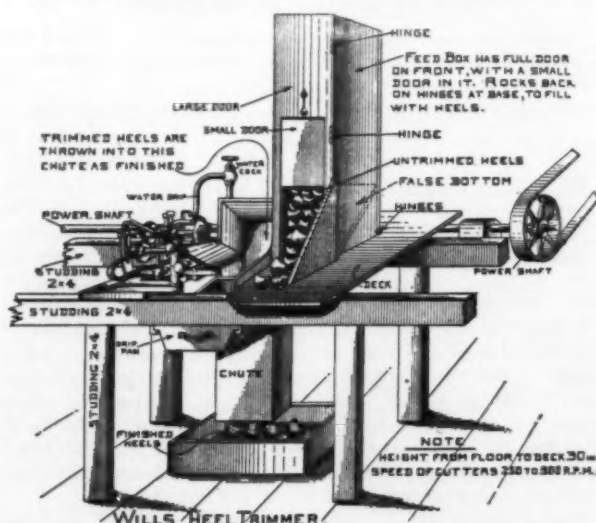
For treads the stock is prepared in the usual manner, and is then sheeted and cut into strips on a calender. The rolls of stock are taken to the tread room, mounted on a let-off, and carried through a stripping mechanism by which the rubber is separated from the liner. After passing over the

driven roller at the top of the machine, the rubber strips make a quarter turn and pass down over idler rollers through chutes, which guide them to the center of a series of iron rollers running on a belt. The widest strip is first rolled on, then the next widest and so on until the required number have been plied up for the tread. By this method of laying each tread separately, all possible entraining of air is prevented, and a more uniform tread is obtained. [Birmingham Iron Foundry, Derby, Connecticut.]

INSTALLATION OF WILLS' OVERFLOW TRIMMER.

The perspective sketch illustrated herewith shows how the Wills' overflow trimmer (described in THE INDIA RUBBER WORLD, July, 1915, page 544) should be installed to gain an increase of 20 per cent in speed and output on such articles as heels, soles, valves, etc.

The feed box, the trimmer, and the chute for the finished heels are so arranged that the operator can readily take the



heel from the feed box, trim it on the rotary shears and drop it into the chute. Thus the cycle can be completed without lost motion or time by the operator.

As many as 3,000 pairs of heels per day can be trimmed by the machine set up in this way, whereas, by hand, an experienced operator can trim less than 1,000 pairs per day. [A. J. Wills, North Brookfield, Massachusetts.]

MILLER'S BOOT AND SHOE REPAIR VULCANIZER.

This vulcanizer is apparently capable of doing almost any sort of repair job, from leaky water bottles to bicycle tires. Specifically, the manufacturers recommend this machine for repairing

footwear, footballs, hot water bottles, inner tubes and single tube tires.

The platen that carries the various clamps, plates and special appliances is mounted on a strongly built frame, supporting the gasoline-heated boiler, which is provided with a steam gage, water gage, safety valve and a fuel tank.

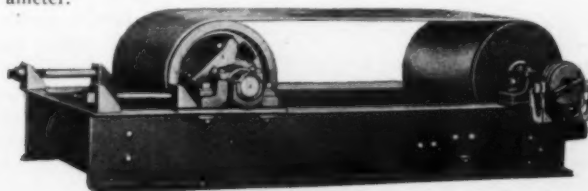
At the left is a steam-jacketed cylinder for repairing circular surfaces, and a plate, curved to receive any size boot or shoe sole, is cast on the back of the platen. The device for repairing heels is

next to the curved sole mold, and the upright projection is an inside boot or shoe mold specially adapted for inside curing on repairs that are so tedious by other methods. There is a flat surface (6 x 10 inches) for vulcanizing, at one time, from three to six tubes for automobiles or motorcycles, and in addition there is one sectional bicycle mold for repairing bicycle tires. [Charles E. Miller, Anderson, Indiana.]

A MAGNETIC SEPARATOR PULLEY.

This is designed to remove pieces of iron and steel from powdered rubber waste.

The device consists of two pulleys mounted on a steel I-beam frame with a conveyor belt running over them. One is a split pulley of ordinary construction. The other is the magnetic pulley, which is composed of electro-magnetic windings on steel bobbins, placed between and doweled to steel discs keyed to the shaft. The coils of the standard pulleys are wound for 110 and 220-volt direct current, and are connected in series. The terminals are brought through a hole in the center of the shaft to a pair of collector rings placed beyond the bearings. These magnetic pulleys are regularly made in sizes from 12 to 30 inches in diameter.

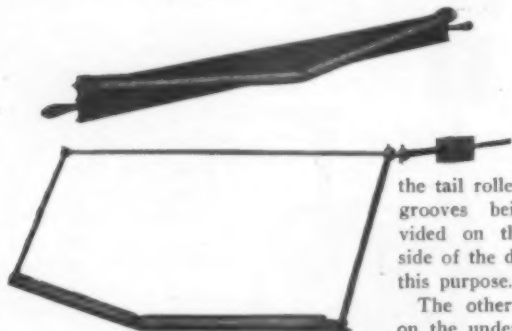


The electric current passing through the coils converts the pulley into a powerful electro-magnet, which attracts and holds any pieces of iron or steel contained in the rubber waste that is being carried along on the conveyor belt. As the normal speed of this belt is 100 feet per minute, the waste and fiber are shot off into a box as the belt turns around the magnetic pulley. The iron and steel pieces adhere to the belt until they pass under and beyond the pulley, when, losing the magnetic attraction, they drop into another box under the belt. [Cutler-Hammer Clutch Co., Milwaukee, Wisconsin.]

ANTI-WRINKLING DEVICE FOR SPREADERS.

To prevent wrinkling of the cloth while it is passing through the spreading machine, the following devices are of interest:

The one shown first in the illustration is used on top of the machine and rests on the pipe coil directly in front of



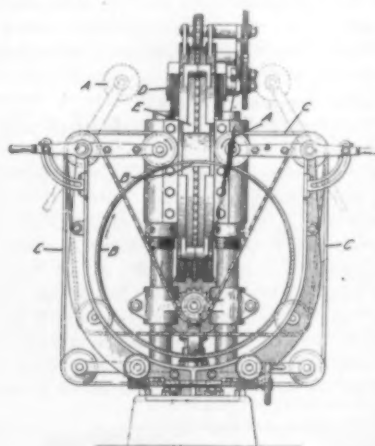
the tail roller, special grooves being provided on the under side of the device for this purpose.

The other is used on the under side of the spreading machine. It is attached under the frame several feet ahead of the wind-up roller. The cloth runs under the angle rollers and the proper tension is gained by the movable counterweight on the projecting arm. [The American Tool & Machine Co., Boston, Massachusetts.]

MACHINERY PATENTS.

A UNIVERSAL TIRE BUILDING AND WRAPPING MACHINE.

HARRIS has invented a universal wrapping machine designed to make cord tires, frictioned fabric tires, to cloth-wrap tires for open curing and, finally, to wrap the finished tire with paper strips to avoid damage in shipping and while in stock.



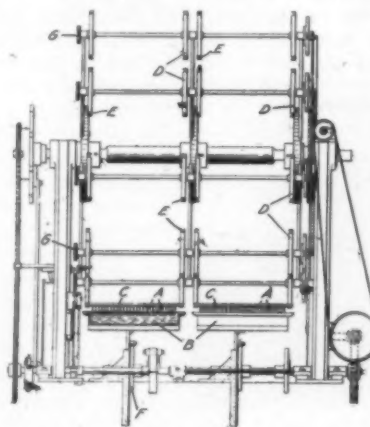
The diagram is a front elevation. Belt rollers *A* are elevated, as shown by the dotted lines, and a pair of steel bead rings *B* are introduced into the side grooves of the endless belt *C*. This belt *C* now serves to rotate the bead reinforcing members *B* in the direction shown by the arrow. A bobbin *D* carrying a supply of rubberized cord or tire fabric is rotated together with shuttle *E*, and the end of the

cord is led over tension rolls to one bead ring. When the driving mechanism is started, the shuttle *E* and the bead rings will be rotated in a clockwise direction at varying speeds in interlinked relation, the cord being thus wound in closely adjacent loops over and around both reinforcing bead rings until the entire space is covered by adjacent parallel strands collectively forming a hollow, flat, tube-like, two-ply annular body material for the tire. A repetition of this winding process will produce a four-ply body material built upon the same bead rings, and so on, until any desired number of superimposed layers of rubberized cord or tire fabric have been added. By varying the relative speed of the shuttle and the bead rings, a different angle of applying the cords may be obtained—a feature very desirable in a carcass built up in this fashion. [A. H. Harris, Youngstown, Ohio, United States patent No. 1,160,075.]

DIPPING MACHINE FOR MAKING NIPPLES.

This is Mahoney's newest machine for forming nipples, medicine dropper bulbs, finger cots and similar articles by dipping.

The side elevation shows the more novel features of the device, which is in the form of a reel that revolves on a shaft



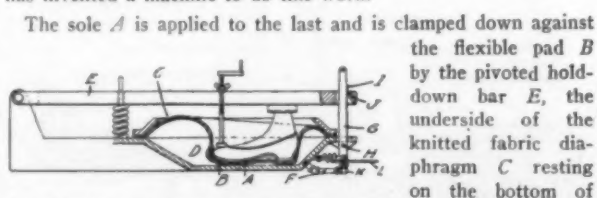
driven by chain gearing from the main shaft. The reel supports nine shafts with carrying heads, each head composed of a frame holding four sets of forms fastened in grooves *E*. Dipping tanks *B* are filled with the rubber solution and forms *A* are applied to the boards *C*, which are placed in position in the head of the frame *D*. When the forms are in position cams *F* raise the tanks *B*,

causing the forms to be immersed in the solution to a predetermined depth, after which the tanks recede. Then the pinion *G* is moved through about 140 degrees, and the ratchet mechanism advances the carrying head *D* one step, thus bringing the next set of forms in position over the dipping tanks. When this has been accomplished, the set of forms which have already been immersed have been moved forward about 36 degrees, placing the forms almost vertically above their original positions, thus permitting each deposit of solution to dry.

When a sufficient number of immersions have taken place to produce the desired thickness on the forms, the lowermost dipping board of the frame is removed and a new one inserted. In this way the operation of the machine is made continuous. [J. L. Mahoney, New Haven, Connecticut, United States patent No. 1,160,923.]

BOOT AND SHOE SOLE ROLLING MACHINE.

Instead of using the pressure of a hand-roller in attaching the unvulcanized sole to the bottom of a rubber shoe, Hemenover has invented a machine to do this work.



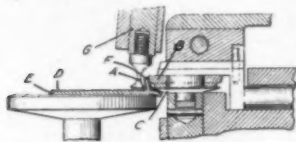
The sole *A* is applied to the last and is clamped down against the flexible pad *B* by the pivoted hold-down bar *E*, the underside of the knitted fabric diaphragm *C* resting on the bottom of the chamber *D*. Compressed air is admitted to this chamber through the pipe *F*, and its pressure causes the diaphragm and pad to be wrapped around and pressed tightly against the lower parts of the shoe, thereby causing an evenly distributed pressure on all parts of the sole, which in turn causes the latter to adhere closely to the shoe body. The vertical latch lever *G* holds bar *E* in clamping position and is pivoted to the frame *H*. The teeth *I* on this bar engage abutment *J* on the hold-down bar, thus making it easy to apply the latter to the last.

After the pressure has been left on for a short time, the valve *K* is turned to exhaust the chamber *D*, and a further turning of the handle *L* then automatically releases the last when the extension of this handle engages the lever *G* and releases the hold-down bar *E*. [W. E. Hemenover, assignor to The B. F. Goodrich Co., Akron, Ohio, United States patent No. 1,160,983.]

MACHINE FOR COVERING INNERSOLES OF THE GEM TYPE.

With Hall's new machine, inner soles of the Gem type are finished by pressing the canvas layer into the angle formed by the lip and feather of the inner sole, to produce a smooth and finished inner sole. The novel features are contained in the drawing which is an enlarged detail in section showing the operating tools, sole and canvas. *A* and *C* are two working tools which cooperate and firmly press together the layer of adhesive cloth *D* and the inner sole *E*, which has a lip *F*. The adhesive cloth is first applied to the inner sole by the Gem machine. A backing tool *B* is used to support the lip *F* and to limit its outward movement. Thus, by not allowing the upper end of the lip free movement, it will not move beyond a predetermined angle in relation to the inner sole.

The tools *A* and *C* are positively rotated and act as feed rollers to feed the inner sole *E*, drawing the canvas over the lip. The tool *B* is made as a disk or wheel and is loosely mounted, to be turned freely by the lip as the inner sole is fed forward by the feed tools and rolls *A* and *C*. The tool *A* is detachably secured to a rotatable shaft *G*, thus permitting a movement of the working tool to or from tools *B* and *C*. By depressing a foot treadle (not shown), tools *B* and *C* may also be moved away or towards tool *A*, thus giving any desired angle to the lip of the sole. [Bicknell Hall, assigned to Panther Rubber Manufacturing Co., Stoughton, Massachusetts, United States patent No. 1,160,711.]

**OTHER MACHINERY PATENTS.****UNITED STATES OF AMERICA.**

ISSUED NOVEMBER 16, 1915.

- 1,160,364. A machine element. L. H. Backeland, Yonkers, N. Y., assignor to General Bakelite Co., New York, N. Y.
1,160,724. Apparatus for treating coated fabrics. C. J. Landin, Boston, Mass.

ISSUED NOVEMBER 23, 1915.

- 1,161,044. Means for repairing pneumatic tires. J. B. Gay, Toronto, Ontario, Canada.
1,161,376. Recording pressure gage. B. B. Bristol, Naugatuck, Conn., assignor to The Foxboro Co., Foxboro, Mass.
1,161,414. Portable tire vulcanizer. W. G. Sandford, assignor to Positive Tire Vulcanizer Co.—both of Davenport, Iowa.

ISSUED NOVEMBER 30, 1915.

- 1,161,892. Footwear vulcanizing apparatus. E. W. Rutherford, Naugatuck, assignor to Goodyear's Metallic Rubber Shoe Co.—both in Connecticut.
1,161,906. Tire building machine. C. W. Stultz, Indianapolis, Ind., assignor to G. & J. Tire Co., a corporation of New Jersey.
1,161,946. Apparatus for wrapping pneumatic tire casings. T. Midgley, assignor to The Hartford Rubber Works Co.—both of Hartford, Conn.
1,161,947. Tire building machine with shaping tool. T. Midgley, Worthington, Ohio, assignor to Morgan & Wright, Detroit, Mich.
1,161,948. Tire building machine with smoothing arm. T. Midgley, Worthington, Ohio, assignor to Morgan & Wright, Detroit, Mich.
1,161,949. Tire building machine. T. Midgley, Worthington, Ohio, assignor to Morgan & Wright, Detroit, Mich.
1,161,950. Fabric stretching machine. T. Midgley, Worthington, Ohio, assignor to Morgan & Wright, Detroit, Mich.
1,161,951. Apparatus for producing dipped articles. P. I. Murrill, New York, N. Y., assignor to Revere Rubber Co., a corporation of Rhode Island.
1,162,072. Spring finger tool for tire building machines. W. Kearns, assignor to Morgan & Wright—both of Detroit, Mich.
1,162,235. Repair vulcanizer. D. S. Hershon, Chelsea, Mass.
1,162,306. Process of filling tires. E. Oliver, Daytona, Fla.
1,162,360. Apparatus for centering tire treads. H. J. Hoyt, assignor to Morgan & Wright—both of Detroit, Mich.
1,162,380. Hammer for fixing tire treads. T. Midgley, Worthington, Ohio, assignor to Morgan & Wright, Detroit, Mich.
1,162,397. Electric tire vulcanizer. R. B. Price, New York, N. Y., assignor to Rubber Regenerating Co., a corporation of Indiana.
1,162,425. Tire builder's tool. D. A. Wilcox, Garden City, N. Y., assignor to Morgan & Wright, a corporation of Michigan.
1,162,535. Tire repair vulcanizer. C. A. Willey, Battle Creek, Mich.

ISSUED DECEMBER 7, 1915.

- 1,163,053. Heated form for dipped goods. C. S. Williams, New York, N. Y., assignor to Revere Rubber Co., a corporation of Rhode Island.
1,163,089. A mixing mill. H. J. Hoyt, assignor to Morgan & Wright—both of Detroit, Mich.

- 1,163,219. Means for inflating pneumatic tires. F. J. Cleaver, Carnegie Borough, Pa., assignor of one-fourth to S. L. H. Morris; one-fourth to H. W. Hodgdon, and one-fourth to E. T. Baron—all of Pittsburgh, Pa.

- 1,163,589. Sole pressing machine with hard rubber core. H. A. Davenport, Brockton, Mass., assignor to United Shoe Machinery Co., Paterson, N. J.

- 1,163,629. Portable repair vulcanizer. A. B. Low, Denver, Colo.

Re-issue.

- 14,027. Apparatus for use in reclaiming vulcanized rubber waste. C. S. Heller, Barberton, assignor to The Moore Architectural & Engineering Co., Akron—both in Ohio.

UNITED KINGDOM.

ISSUED NOVEMBER 17, 1915.

- 16,627 (1914). Rubber belt fastening. F. Sinclair, 39 Orchard Road, Erdington, Birmingham.
17,110 (1914). Ebonite in insulated electric bearings. C. E. Wieselgreen, 26 Viktoriagatan, Gothenburg, Sweden.

ISSUED NOVEMBER 24, 1915.

- 17,158 (1914). Devices for making rubber cored golf balls. J. R. Gam-meter, Portage Path, Akron, Ohio.
17,164 (1914). Rubber strips used with paving blocks. British Murac Syndicate, and M. M. Dessau, 60 London Wall, London.
17,187 (1914). Seam reinforcing strip for bladders, hot water bottles, etc. C. H. Gray, Silvertown, Essex.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 476,720 (December 11, 1914). Improved tire making machine. E. Sloper.

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

- 289,119 (June 30, 1914). Die-press and vulcanizing apparatus for manufacturing tire casings. Henry James Doughty, Edgewood, Providence, Rhode Island, U. S. A. Represented by H. Neubart, patent-lawyer, Berlin, SW 61.

NEW MANUFACTURING PROCESSES.**UNITED STATES OF AMERICA.**

ISSUED NOVEMBER 23, 1915.

- 1,161,093. Method of making tires. I. J. Webster, Haverhill, Mass., assignor to Reliance A. C. Co., Inc., New York, N. Y.
1,161,213. Packing. F. A. Headson, assignor to H. W. Johns-Manville Co.—both of Milwaukee, Wis.
1,161,549. Tire tread. T. B. Tiefenbacher, New York, N. Y.
1,161,603. Process of drying colloidal substances. G. B. Bradshaw, Brooklyn, N. Y.
1,161,614. Marking vulcanized rubber articles by a heated die. M. H. Clark, Hastings-on-Hudson, N. Y.

Adjudicated Patent.

- (U. S. D. C.) The Marks patent No. 635,141 for a process for devulcanizing rubber waste. Held not anticipated and valid. Philadelphia Rubber Works Co. vs. United States Rubber Reclaiming Works, 225 Fed. Rep. 789.

- (U. S. D. C.) The Bakeland patents Nos. 954,666, 1,018,385 and 1,037,719 for varnishes. Held not anticipated and valid. General Bakelite Co. vs. Nikolaus. 225 Fed. Rep. 539.

ISSUED NOVEMBER 30, 1915.

- 1,161,965. Treatment of plastic material. R. B. Price, New York, N. Y., assignor to Rubber Regenerating Co., a corporation of Indiana.
1,161,966. Manufacture of vulcanized articles. R. B. Price, New York, N. Y., assignor to Rubber Regenerating Co., a corporation of Indiana.
1,161,967. Method of producing vulcanized plastic articles. R. B. Price, New York, N. Y., assignor to Rubber Regenerating Co., a corporation of Indiana.
1,162,384. Method of making valve packing. F. Y. Nichols, Chicago, Ill.
1,162,396. Anti-slipping and anti-wearing material. R. B. Price, Mishawaka, Ind., assignor to Rubber Regenerating Co., a corporation of Indiana.
1,162,454. Method of manufacturing footwear. M. H. Clark, Hastings-on-Hudson, N. Y., assignor to Goodyear's Metallic Rubber Shoe Co., a corporation of Connecticut.
1,162,479. Method of manufacturing tires. A. H. Harris, Youngstown, Ohio.

ISSUED DECEMBER 7, 1915.

- 1,162,745. Method of manufacturing reinforced air tubes. J. W. Blodgett, Chicago, Ill.
1,163,525. Method of manufacturing rubber articles. T. Gare, New Brighton, England.

UNITED KINGDOM.

ISSUED NOVEMBER 10, 1915.

- 16,359 (1914). Method of covering golf balls. A. C. B. Bell, 17 Lansdowne Crescent, Edinburgh.

ISSUED NOVEMBER 17, 1915.

- 16,626 (1914). Rubber belting. F. Sinclair, 39 Orchard Road, Erdington, Birmingham.

ISSUED NOVEMBER 24, 1915.

- 17,193 (1914). Process for making rubber articles. R. B. Price, 830 Park avenue, New York, N. Y., U. S. A.

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

- 288,935 (July 11, 1913). Air tube with fabric inlay. Brown Perfection Tube Co., New York City, U. S. A. Represented by Dr. L. Gottscho, patent-lawyer, Berlin W 8.
288,992 (September 25). Tire casing. Bruno Salzmann, Feldstrasse, 16, Berlin-Steglitz.

The Obituary Record.

JAMES MAPES DODGE.

THE chairman of the board of directors of the Link-Belt Co., Chicago, Illinois, James Mapes Dodge, known to the rubber industry of the United States, died at his home in Philadelphia, Pennsylvania, on December 4, 1915, in the 64th year of his age.

Mr. Dodge was born at Waverly, New Jersey, his grandfather being Professor James J. Mapes, his mother Mary Mapes Dodge, well known in literary circles and for a number of years editor of the *St. Nicholas* magazine. He spent three years at Cornell University and a year at Rutgers College, where, under the late Professor George H. Cook, State Geologist of New Jersey, he took a special course in chemistry. His active work in the business world commenced with a brief engagement at the Morgan Iron Works, New York. He then entered the shops of John Roach, the shipbuilder, at Chester, Pennsylvania, where his marked mechanical ability and ingenuity took him rapidly through the stages of journeyman and foreman to the post of superintendent of erection.



J. M. DODGE.

In 1876 he left the shipyard, and after several years' experience in the East, went to Chicago, where he became acquainted with William D. Ewart, inventor of the Ewart Link-belt, with whom and his associates Mr. Dodge entered on the development of the chain belt business.

Later he returned East and, with Edward H. Burr, formed the firm of Burr & Dodge. This partnership resulted in the organization in 1888, of the Link-Belt Engineering Co.

In the planning and arranging of equipment to secure the most economical and efficient handling of products in both the raw and finished state, Mr. Dodge was notably successful; his system of handling coal, in and out of storage, bringing him the Elliott Cresson gold medal of the Franklin Institute of Philadelphia, Pennsylvania.

When it is remembered that while developing inventions on which upwards of 100 letters patent were granted, he at the same time directed the operations of such important corporations as the Link-Belt Engineering Co. and the Dodge Coal Storage Co.—of which companies he was elected president in 1892, to become chairman of the board of directors of the Link-Belt Co., when it was organized in 1906 as a result of the merger of the allied companies—the Link-Belt Engineering Co., Philadelphia, Pennsylvania, the Link-Belt Machinery Co., Chicago, Illinois, and the Ewart Manufacturing Co., Indianapolis, Indiana—some idea of his diligence and versatility may be formed.

Among his designs and inventions were the links and attachments of all link-belt in use, the bushed joint that made the silent chain possible, etc.

With all these activities, he took deep interest in the personal

welfare of his employees and encouraged in them the development of a spirit of ambition and responsibility. Mr. Dodge was recognized as a leader in the various societies and clubs of which he was a member, including the American Society of Mechanical Engineers, of which he was a past president; Franklin Institute, vice-president; Stevens Institute of Technology, Hon. Sc.D.; School of Design, Philadelphia, trustee; Union League Club, Philadelphia; University Club and Zeta Psi Fraternity.

CHARLES H. WILLIAMS.

Charles H. Williams, vice-president of the Williams Foundry & Machine Co., Akron, Ohio, died on December 3, at a hospital in Cleveland, Ohio, where he had undergone an operation. Deceased, who came to Akron from Footville, Wisconsin, 12 years ago, engaged in the foundry and machine business with his brother, J. K. Williams. The firm was notably successful in the manufacture of special machinery, molds and dies for rubber manufacturers, including hydraulic and hand presses, patent steam vulcanizers, etc. Lloyd Williams, son of the deceased, is master mechanic for the Williams company.

EDMUND R. HAWKINS.

Edmund Richard Hawkins, for the past four years a partner in the firm of H. A. Astlett & Co., crude rubber dealers and export commission merchants, 117 Pearl street, New York, died November 30, 1915, at his residence in White Plains, New York.



E. R. HAWKINS.

Mr. Hawkins, who was 45 years of age, was born in India, where his father held an important government post. His early life was spent in Leicester, England, and he was educated at the Leicester grammar school. As a young man he entered the employ of the London & Brazilian Bank, of London, and was first sent out to Lisbon, Portugal, then to Rio Grande do Sul, Para and Manaos, Brazil, where he filled the

position of accountant. Coming much in contact with the crude rubber dealers, he acquired a knowledge of the trade, and ultimately resigned his accountancy to engage in business in Manaos, and later in Para, as a rubber broker. Here he made many friends, by whom he will be remembered with affection and esteem. Keenly interested in athletics, he was often instrumental in diverting the attention of the younger members of the foreign colony from unprofitable pursuits to healthful, outdoor sports and exercise. When he came to New York he left many friends, who greatly regretted the loss of his genial companionship.

Mr. Hawkins possessed a fine tenor voice, and frequently took

part in musicales and church entertainments at White Plains. He leaves as his immediate family a widow, and two sons, aged respectively, two and seven years, to whom the sincere sympathy of his many friends is extended.

WILLIAM ANDREW CONNER.

William Andrew Conner, first vice-president of the Standard Underground Cable Co., Pittsburg, Pennsylvania, died suddenly at his office in Perth Amboy, New Jersey, on December 6, 1915.

Mr. Conner was born at Baltimore, Maryland, September 12, 1859. He began his business career in Pittsburg in 1876, in the oil refining industry, and ultimately became assistant manager for



W. A. CONNER.

the Standard Oil Co. In 1885 the Standard Underground Cable Co. built its first plant in Pittsburg. Mr. Conner took charge, and from that time until his decease, remained at the head of the company's manufacturing business. During this period he planned and supervised the erection of the company's extensive plants at Pittsburg, Pennsylvania; Perth Amboy, New Jersey; Oakland, California, and Hamilton, Canada. Since 1909 he has been vice-president of the Standard

Underground Cable Co., of which he was a director for ten years. He was also vice-president and a director of the Standard Underground Cable Co. of Canada, Limited, and was actively interested in the organization of the Perth Amboy Trust Co., Perth Amboy, New Jersey, of which he was vice-president.

Mr. Conner had been a resident of Plainfield, New Jersey, since 1904, when he moved there from Pittsburg. He leaves a widow, who was a Miss Tupper, of Michigan; a brother, Edward Conner, of Orange, New Jersey, and a sister, Mrs. Roak, of Brooklyn, New York.

A 32nd degree Scottish Rite Mason and a Knight Templar, a member of the Duquesne Club, of Pittsburg, the Hamilton Club, of Hamilton, Canada, and the Plainfield Country Club, Mr. Conner had many warm friends, by whom he was highly esteemed. The officers and principal employees of the Standard Underground Cable Co. and many friends attended the funeral services conducted at his late residence by the Rev. Dr. Phillip B. Strong, Plainfield, New Jersey, and the Rev. Dr. Lemuel C. Barnes, New York.

A PRIZE SHOW OF RUBBER FOOTWEAR.

With a view to assisting the weather bureau in interesting the pedestrian in rubber footwear, a National Rubber Sole and Heel Week is suggested by the "Boot and Shoe Recorder." The scheme is to devote the week of January 3-11 to a publicity campaign on behalf of rubbers, rubber boots, rubber heels and soles, and similar rubber devices for protection against wet feet and eliminating the shock and jar incidental to pounding hard leather shoes on harder pavements. The weather usually prevalent at this period is almost certain to be helpful to the plan and make an attractive window display of rubber footwear timely. Our contemporary offers prizes for the best display made during the period in question.

THE EFFECTS OF THE LOGWOOD EMBARGO.

THE present situation as regards the dyestuff question is an embarrassing one in many lines of industry, and, as is usually the case under such conditions, the rubber trade suffers in some of its manifold classes of production. When the supply of coal tar dyes was cut off through the discontinuance of German commerce the use of logwood, or its extract, partially filled the gap. About the first of last month the British Government declared an embargo and no logwood could be sent out of Jamaica—the principal source of supply—except to British ports. In fact one or two ships were unloaded which were almost ready to sail to the United States, and the last cargo leaving that island for this country was sunk off Delaware breakwater. Textile men, dyers and felt manufacturers held a meeting in New York, and the United States Government was petitioned to use its influence to remove the prohibition, but about the middle of the month the embargo was further extended to include logwood chips and extract, thus further emphasizing the crisis. Several industries must suffer from the almost total absence of these dyestuffs and it is stated that they are so scarce that some mills and dyeing establishments must cancel their orders and shut down.

Several branches of the rubber industry will suffer. The rubber footwear industry will be affected, much textile and felt goods being used in making overshoes and arctics. The felting mills are using logwood dyes and have some supplies on hand. When these supplies are gone they will be forced to rescind their contracts unless the embargo is modified. However, there seems to be a falling off in the demand for arctics, though this may be balanced by a larger demand for high buckle overshoes, which are now being called for in place of rubber boots. Linings for rubber boots are principally of knit goods in light or natural colors, and felt linings are not dyed. Many rubber plants now turning out great numbers of black canvas tennis shoes are likely to be affected.

The manufacturers of mackintoshes use large amounts of cotton, worsted and woolen textiles, and the larger manufacturers are well supplied with these fabrics, though more are contracted for. Prices advanced when the scarcity of aniline dyes became noticeable, and immediately the embargo was placed upon logwood cotton goods in blacks and some colors advanced from 30 to 50 per cent., and woolens and worsteds from 15 to 30 per cent., which must affect prices of garments as soon as present stocks of textiles are exhausted.

Carriage cloths come under the same general conditions. These are mainly of such colors as need aniline or logwood dyes, and prices of treated textiles so largely used in the automobile trade are similarly affected.

The elastic fabric manufacturers will undoubtedly feel the effects of the embargo in the near future. While some concerns purchase their yarns already dyed, one of the largest producers in this country purchases its yarns in the natural color, and has them dyed to order. At present the dyers have large amounts to color and deliver, and are under contract, which will make present advanced costs fall upon the dyers instead of upon the weavers.

It is expected, however, that the British Government will later remove the embargo, or so modify it that our industries may again be placed in as effective a position as they were previous to this latest prohibitory enactment.

District managers of The Fisk Rubber Company, Chicopee Falls, Massachusetts, to the number of about 100, met in conference on December 17 at the Hotel Kimball, Springfield, Massachusetts. The purpose of the gathering was to bring the company's representatives in all parts of the country into closer touch with each other and to discuss important questions of commercial policy. A dinner given by the company to the visiting managers and heads of departments brought the convention to a close.

News of the American Rubber Trade.

FISK RUBBER CO. SECURES CONTROL OF THE FEDERAL RUBBER MANUFACTURING CO.

CONTROL of the Federal Rubber Manufacturing Co., Milwaukee, Wisconsin, has been purchased by the interests of the Fisk Rubber Co., Chicopee Falls, Massachusetts, which will in future direct the policies of the first named corporation.

Byron G. Douse has disposed of his holdings of Federal stock and resigned as president and general manager of the company. At a meeting of the stockholders, directors were elected as follows: H. T. Dunn and J. A. Kepperley, Toledo, Ohio; B. H. Pratt, H. A. Githens and R. C. Ward, Milwaukee, Wisconsin; and H. G. Fisk, E. H. Broadwell, G. A. Ludington and E. N. Bogardus, Springfield, Massachusetts. The directors elected officers as follows: H. T. Dunn, president; B. H. Pratt, vice-president and general manager; H. A. Githens, assistant general manager; H. G. Fisk, treasurer; R. C. Wood, secretary and assistant treasurer; E. M. Bogardus, comptroller.

This acquisition of the Federal plant by the Fisk company is of considerable interest to the trade. The Fisk plant at Chicopee Falls, comprising some 29 acres of floor space, is said to be the largest exclusive pneumatic tire making plant in operation. The Federal company, in addition to pneumatic and solid tires, manufactures general mechanical lines, such as baby carriage tires, hoof pads, rubber heels, matting, etc. Its plant is located at Cudahy, Wisconsin—a suburb of Milwaukee—and comprises five acres of floor space.

The two organizations will be conducted separately, in both manufacturing and selling departments, the efforts of the Federal organization being especially directed towards building up and developing the jobbing and mechanical lines.

RUBBER COMPANY DIVIDENDS.

The quarterly dividend of \$2 per share has been declared by the Boston Belting Co., Boston, Massachusetts, payable January 1, 1916.

The quarterly dividend of 1¼ per cent on the preferred stock of the Goodyear Tire & Rubber Co., Akron, Ohio, has been declared, payable January 1, 1916, to holders of record December 20, 1915.

The Firestone Tire & Rubber Co., Akron, Ohio, has declared a quarterly dividend of 1¼ per cent on preferred, and 5 per cent on common stock, payable January 15, 1916.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on November 7 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

	Bid.	Asked.
Ajax Rubber Co., new.....	70	70½
Firestone Tire & Rubber Co., common.....	690	705
Firestone Tire & Rubber Co., preferred.....	112	113
Goodrich Co., The B. F., common.....	74¾	76
Goodrich Co., The B. F., preferred.....	112	112½
Goodyear Tire & Rubber Co., common.....	335	338
Goodyear Tire & Rubber Co., preferred.....	114	..
Kelly-Springfield Tire Co., common, old	297	298
Kelly-Springfield Tire Co., common, new	74	75
Kelly-Springfield Tire Co., 1st preferred.....	95	98
Kelly-Springfield Tire Co., 2nd preferred.....	72½	74
Miller Rubber Co., common.....	235	243
Miller Rubber Co., preferred.....	112	114
Portage Rubber Co., common.....	..	..
Portage Rubber Co., preferred.....	..	..
Rubber Goods Manufacturing Co., preferred.....	..	..
Swinehart Tire & Rubber Co.....	87	90
United States Rubber Co., common.....	55	55½
United States Rubber Co., preferred.....	109	110

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS.

The various divisions of the National Association of Waste Material Dealers held meetings at the Hotel Astor, New York, on December 14 and 15. The meeting of the members of the Scrap Rubber Dealers' Division was to have been held on the 15th, but the inclement weather interfered with travel to such an extent that there were not sufficient members on hand to constitute a quorum, and the meeting was deferred until the following month.

RUBBER DEALERS BUY A RAILROAD.

Theodore Hofeller & Co., Buffalo, New York, dealers in old rubber and metals, acting in conjunction with C. A. Finnegan, of that city, and A. Weber, of Louisville, Kentucky, have purchased, from the bondholders' committee, the Buffalo & Susquehanna Railway, the purchase price being quoted at \$800,000. The property includes right of way, tracks and stations of an 80-mile steam railway, from Buffalo to Wellsville, New York, with rolling stock, etc., and some valuable real estate, including a 25-acre plot, fronting on the inner harbor at Buffalo, with 2,000 feet of dockage space. It is the present intention of the purchasers to continue the operation of the road.

RUBBER TRADE INQUIRIES.

143. A new American rubber specialty company desires the name of a manufacturer of coloring or ink, such as is used for printing advertising toy balloons.

144. A correspondent wishes to be placed in touch with manufacturers of collapsible tubes and tube-filling machines.

145. A New York export house desires to secure the agency in Spain for rubber collars and cuffs.

146. A dealer in rubber goods desires names of manufacturers of metal shut-offs for fountain syringes.

147. A correspondent in Denmark desires names and addresses of manufacturers of valves for inner tubes for use in bicycle, motor and auto tires.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A Brazilian firm wishes to communicate with manufacturers of suspenders, garters and other articles. Report No. 19,303.

A man in the United States desires samples and prices on rubber heels and other articles for firms in Uruguay. Report No. 19,340.

A man in Norway wishes to establish commercial relations with manufacturers of machinery for making pneumatic automobile and cycle tires and tubes. Report No. 19,341.

A company in France desires catalogs, prices and terms for sole agency of caoutchouc articles for medicinal use. Report No. 19,371.

A man in France desires to represent American firms manufacturing rubber sponges, garden and fire hose, pipes in hard rubber or vulcanite, and other articles. Report No. 19,397.

The agency of American manufacturers of rubber goods and other supplies is desired by a man in Mexico. Report No. 19,407.

A man in Brazil wishes to represent manufacturers of rubber goods, toys and chemicals. Report No. 19,414.

A man in South Africa desires catalogs and full information from American manufacturers regarding machinery for fiberizing, spinning and weaving asbestos for fabrics made from this product, with a view to installing such machinery. Report No. 19,604.

A firm in Argentina desires to represent American manufacturers of rubber goods and other lines. Report No. 19,629.

PERSONAL MENTION.

An American contemporary speaks thus pleasantly of the editor of this paper: "Henry C. Pearson, editor of THE INDIA RUBBER WORLD, has been elected a Fellow of the Royal Geographical Society, London, an honor to which he is fully entitled, for the many investigations he has made in rubber-producing countries on four continents. Mr. Pearson well deserves this distinction, though, being a modest man, it is probable that he will refrain from adding F.R.G.S. to his signature."

B. T. Morrison, formerly at the head of the Reading Rubber Mills, Reading, Massachusetts, who has been quite ill, has so far recovered that he has gone to his winter home in Pasadena, California.

On Tuesday, December 28, Clarence H. Low, secretary of the U. S. Rubber Reclaiming Co., Inc., was married to Miss Madeline Mayer at the home of the bride's parents, the Hotel Blackstone, Chicago, Illinois. Mrs. Low is the daughter of Mr. and Mrs. Levy Mayer, a graduate of Smith College ('14) and an enthusiast in outdoor sports. Her father is a prominent corporation attorney. The happy couple will tour California and Hawaii, after which they will make their home in Westchester County, New York.

L. K. Rittenhouse, who has been connected with the Diamond and Goodrich rubber companies for the past ten years, in charge of a number of their branch houses, resigned as manager of the St. Louis, Missouri, branch of The B. F. Goodrich Co. on December 31. It is stated that he is returning East.

R. J. Evans has resigned as president and general manager of the Franklin Manufacturing Co., Franklin, Pennsylvania, to become vice-president of the Perfection Tire & Rubber Co., Fort Madison, Iowa.

L. H. Taylor, formerly salesman at the Denver, Colorado, branch of The B. F. Goodrich Co., has been appointed Western manager for the New Jersey Car Spring & Rubber Co., with headquarters at Denver.

F. Haskell Smith, for the past four years factory superintendent of the plant of the Federal Rubber Manufacturing Co., Milwaukee, Wisconsin, has severed his connections with this company. He has not as yet announced his plans for the future.

Antonio Parra, vice-president of the Venezuela Trading Co., Ciudad Bolivar, was in New York recently and reported that 1,200 men were employed by his company in gathering balata and gum chicle from the Bajo Orinoco and the river Yuruari, Venezuela.

George S. Miller, formerly connected with the American Rubber Co., has been appointed manager of the footwear department of the United States Rubber Export Co., Limited.

Edgar B. Davis, vice-president, in charge of the General Rubber Co.'s plantations in Sumatra, recently presented to Colonel Samuel P. Colt an ivory tusk taken from an elephant killed on one of the company's estates. The tusk has been beautifully polished and bears a gold cap with the following inscription:

Colonel Samuel Pomeroy Colt, Serbangan Estate, H.A. P.M., 1914.

The other tusk taken from this same elephant was presented to one of the native sultans of Sumatra.

Commodore E. C. Benedict, on his yacht "Oneida," with a party of friends reached Havana, Cuba, on December 17. Next day the "Oneida" party, as guests of President Menocal of the Cuban Republic, went on a fishing trip along the north coast.

Dr. Frederic Dannerth, well known to the rubber trade, is now in California on a business trip. He will remain at the Coast a month or more.

Charles Howard Newman will represent Pell & Dumont, crude

rubber brokers, 68 Broad street, New York, as salesman, after January 3.

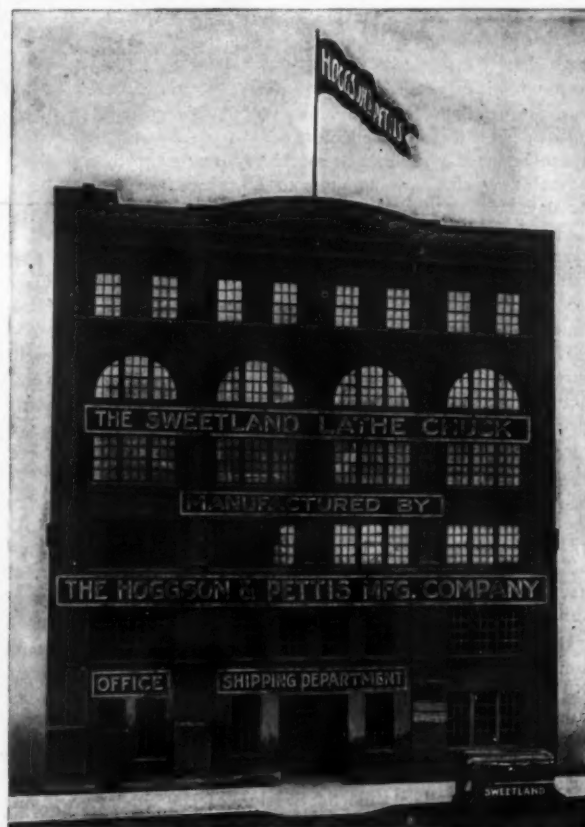
Bertram G. Work, president of The B. F. Goodrich Co., returned from Europe December 22, 1915, on the *Rotterdam*.

A. G. SPALDING & BROS.' NEW OFFICERS.

A. G. Spalding & Bros., New York, have elected First Vice-President J. Walter Spalding, president, to succeed the late Albert G. Spalding. He is succeeded by Second Vice-President J. W. Curtis. H. B. Spalding, son of the newly elected president and formerly counsel to the company, and G. A. Phelps, who has for years had charge of the firm's Eastern branches, have been elected vice-presidents. C. S. Lincoln, formerly in charge of the company's Western branches, with headquarters in Chicago, is now secretary, and W. T. Brown, for many years treasurer of the concern, has been re-elected to that office.

GROWTH OF A RUBBER MILL SUPPLY BUSINESS.

WHEN S. J. HOGGSON started in business in New Haven, Connecticut, as a die-sinker and engraver in 1849, he probably had no idea that his enterprise would develop into an important rubber mill supply business. But his work was in demand by rubber goods manufacturers, and his trade grew with the rapid expansion of that industry. In 1879 he formed a partnership



PLANT OF HOGGSON & PETTIS MANUFACTURING CO.

with George C. Pettis, with the firm name of Hoggson & Pettis, which, as it continued to expand, was incorporated in 1882 as The Hoggson & Pettis Manufacturing Co. The firm has always made a specialty of engraving and die-sinking for rubber manufacturers, and of the supply of such small tools as they use, and the business has grown to large proportions, as the accompanying illustration of the New Haven plant will show.

THE PANTHER RUBBER MANUFACTURING CO.

IN 1909, Frank Berenstein and Miah Marcus, formerly of the sales force of the Foster Rubber Co., Boston, Massachusetts, at the suggestion of some of their customers, started, at Trenton, New Jersey, the manufacture of rubber heels, under the trade name of "Panther." Soon afterward, William Bernstein was admitted to the business, which was ultimately incorporated as The Panther Rubber Manufacturing Co., with Frank Berenstein as president; Miah Marcus, vice-president, and William Bernstein, treasurer—offices they still retain.

The company prospered from the start, and by 1912 the demand for its product had assumed such proportions that its accommodations were inadequate and it eventually located in the plant at Stoughton, Massachusetts, which the Plymouth Rubber Co. had shortly before vacated. Since the removal to Stoughton, the company's business has continued to expand, the original 75 hands, with four in the office, having been increased to a working force of about 200, and it requires an office force of 12 to handle the business. Several large additions have also been made to the plant, in spite of which, night and day work has been necessary to keep up with the orders. A new power plant was added, but only recently a new engine had to be installed, with new machinery, that more than doubled the output, which now amounts to 2,000 to 3,000 pairs of heels per day.

The demand for the company's goods in Canada showing a consistent development, it was determined to manufacture in that country, and in 1914 a plant was established at Sherbrooke, Quebec, Canada, which now supplies the Canadian trade with the same goods that are made at Stoughton.

The company manufactures Panther Tread, Indian, Elwell, Surety and Yankee rubber heels, special heels for the shoe manufacturing trade, rubber soles, rubber soling and rubber molded specialties, the goods being sold extensively by a staff of twelve salesmen, throughout the United States, Canada, Cuba, Porto Rico, Central and South America and the Far East.

ANNUAL MEETING OF THE S. A. E.

The Society of Automobile Engineers will hold their annual meeting January 5 and 6, 1916, at the Engineering Societies Building, 29 West Thirty-ninth street, New York.

Members and guests, including ladies, are requested to register promptly on arrival in the city. The registration bureau will be open Wednesday and Thursday. Upon registration, badges, programs and papers will be supplied.

A session of the Standards Committee will be held in the rooms of the Society, January 4, at 9:30 A. M.

A Business and Standards Session of the Society will be held, January 5, at 9:30 A. M.

Professional sessions of the Society will be held, January 6, at 9:30 A. M. and 12:30 P. M. in the auditorium. The president's address will be delivered at the beginning of the Thursday morning session.

The members will be glad to learn that the annual dinner and entertainment will take the form of the gala occasions of 1913 and 1914, and will be held at the Hotel Plaza, Thursday, January 6, at 8 P. M.

TRADE NEWS NOTES.

The Nearpara Rubber Co., Trenton, New Jersey, has recently installed an up-to-date reclaiming equipment which is motor-driven and includes a special drying process. The reclaimed rubber turned out by this company contains a particularly high per cent of rubber, and the product has become very popular with rubber manufacturers.

Charles E. Wood, 24 Stone street, New York, has appreciably increased his office space and force. Mr. Wood, formerly identified with the New York Commercial Co., has been uniformly successful since his retirement from that concern, and among his many present activities is expert examining for a number of manufacturers.

The Continental Rubber Co., New York, has recently removed its offices to the Equitable Building, 120 Broadway. This company, which specializes in guayule, was formerly located at 17 Battery place.

The Loewenthal Co., 37 West Thirty-ninth street, New York, will remove its offices to the Brooklyn warehouse about January 1. The object of combining office and warehouse is the promotion of the company's service to its customers, as the increased facilities for handling, buying and selling will, in the opinion of the executives, greatly enhance the efficiency of "Loewenthal Co.

Service" to its trade. The address is 747 Wythe avenue.

The Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut, has extended its welfare work by building a fully equipped moving picture theater for its employees.

The Omo Manufacturing Co., Middletown, Connecticut, maker of dress shields, won suit brought in the Federal court to restrain another manufacturer from using a similar appearing trade-mark on the same sort of goods. The Omo company's goods are marked "oMo." The other manufacturer used the mark "DMD," written in a way that, in the opinion of the court, decidedly resembled the trade-mark of the Omo company.

At the meeting of stockholders of the Bucyrus Rubber Co., held at Bucyrus, Ohio, December 9, the following officers and directors were elected: P. J. Carroll, president; George Donnenwirth, vice-president; Anson B. McVay, secretary; W. A. Blicke, treasurer; Col. C. W. Fisher, A. G. Stoltz, H. A. Paxton, M. R. Lewis, Jacob Colter.

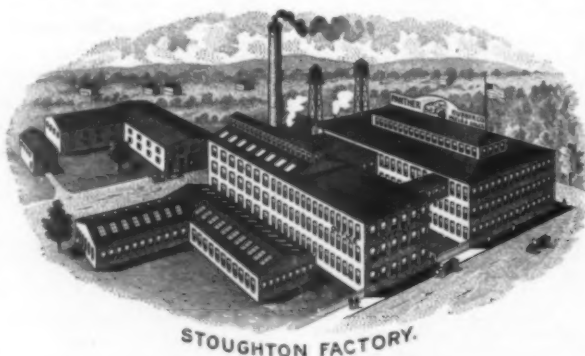
The General Electric Co., Schenectady, New York, is erecting a one-story factory addition, 60 x 208 feet, which will cost \$25,000. C. F. Hulth is superintendent of buildings.

A Schrader's Sons, Inc., Atlantic avenue, Brooklyn, New York, has recently added a seven-story building, which adjoins the original factory. The entire plant is constructed of concrete and is conspicuous among the modern factories of Brooklyn.

The Laurel Co., operating at Garfield, New Jersey, has added a line of plumbers' supplies and tubing to its general product of molded goods and erasive rubbers. The general manager of the Garfield company is George Dyer, Produce Exchange Annex, New York.

The plant of the S. & L. Rubber Co., Chester, Pennsylvania, has been sold for \$34,825 to Clark W. Harrison, of the Bloomingdale Rubber Co., Butler, New Jersey.

As Akron manager for Charles T. Wilson Co., Inc., New York, dealers in crude rubber, L. N. Le Pan has succeeded Henry Perlsh.



STOUGHTON FACTORY.

THE NEW UNITED STATES TRUCK TIRE.

After thorough tests, under the most severe working conditions, on trucks of all kinds and roads of all descriptions, a new truck tire is offered by the United States Tire Company to truck owners as affording the maximum wear under heaviest loads and a degree of resiliency that is not only lasting but which affords the greatest protection to the mechanism of the truck. A new type of hydraulic press is used in vulcanizing this tire, under a pressure of 800 tons, which forces all gas and every atom of moisture out of the rubber. The extreme depth of the dove-tailed serrations in the steel base into which the hard rubber compound is forced, and there vulcanized, makes an inseparable union between the rubber foundation and the steel rim.

These advantages, combined with a rubber compound of exceptional toughness and in larger volume than in most truck tires, are features impressed on the truck owner as insuring longer life to tires—the most expensive item in his truck equipment.

The sectional form of the tire is likewise claimed as an improvement on previous patterns, insuring the retention of the shape until the tire is quite worn out, side stripping of the tread being impossible. [United States Tire Co., New York.]

PERSONAL MENTION.

Jesse E. La Dow, as representative of the Mansfield Tire & Rubber Co., Mansfield, Ohio, has been appointed chairman of the press and publicity committee of the Ohio Manufacturers' Association. Mr. La Dow presented a report at the fifth annual meeting of the association held at Columbus, Ohio, on December 14.

John W. Conway, superintendent of the Bridgeport, Connecticut, branch of the Polack Tyre & Rubber Co., New York, is making an extended trip abroad, to investigate conditions as related to the English and German factories of the Polack company.

Charles E. Ross has been made manager of the Columbus branch of the Midgley Tire & Rubber Co., Lancaster, Ohio.

At a meeting of the Board of Directors of the United States Tire Co., New York, held December 15, Ernest Hopkinson, patent counsel of the United States Rubber Co., was elected vice-president and a member of the executive committee of the United States Tire Co.

George B. Hendrick, of Winthrop, Massachusetts, has been appointed manager of the newly established publicity department of the Fisk Rubber Co., Chicopee Falls, Massachusetts. In addition to publicity matters, he will have charge of printing and will edit the company's house organ, but the new department will have no connection with the advertising department, the management of which remains unchanged. Mr. Hendrick is well known among newspaper and advertising men of the East, having been, successively, advertising manager of the Boston "Traveler" and the Pittsburgh "Post" and "Sun," and sales manager of the A. Muford Corporation, of Hartford, and of the George H. Ellis Co., of Boston. He goes to the Fisk company from the latter concern.

Arthur E. Friswell, who returned to the United States early last summer after several years' stay in Bermuda, as recorded in THE INDIA RUBBER WORLD of June 1, 1915, is to engage again in the tire manufacturing business. He has accepted a position with the Northern Rubber Co., Retford, Nottinghamshire, England, to reorganize and extend the business of its Sheffield branch in the engineering machinery and colliery districts of the North of England.

The Michelin Tire Co., Chicago, Illinois, informs us of the advancement of R. B. Tracy, formerly central manager, to the position of factory representative, with supervision over the following branch territories: Philadelphia, Cleveland, Chicago, St. Louis, Des Moines, Kansas City and Minneapolis.

TRADE NEWS NOTES.

In a circular letter, dated December 1, 1915, Ewart M. Brunn announces the dissolution, by mutual consent, of his partnership with Paul Bertuch, under the firm name of Hagemeyer & Brunn, and that the business will be continued by him, at the same address, 9 Stone street, New York, under the same firm name. Paul Bertuch, under the same date, announces his intention to continue in business as a rubber merchant, under his own name, at 25 Beaver street, New York.

A meeting of the American Society for Testing Materials, Committee D-11 on standard specifications for rubber products, was held in New York, December 14, 1915.

The directors of the Canadian Connecticut Cotton Mills, Limited, Sherbrooke, Quebec, Canada, have authorized a large addition in the equipment, doubling the production of the mill. Additional buildings will also be erected. Although the consumption of tire fabric in Canada has heretofore been insufficient to warrant this expansion, evidence of an era of better times now leads the company to anticipate conditions and prepare for more economical operation.

Fire broke out in the plant of Julius Schmid, manufacturer of druggists' sundries at Long Island City, New York, on the night of December 10, 1915, the three-story frame building and entire contents being totally destroyed, with a loss of \$20,000, fully covered by insurance. The flames spread to the residence of C. F. Schmid, secretary of the company, adjoining the factory, and this, with its contents, was also destroyed.

The L. H. Butcher Co., San Francisco and Los Angeles, California, will act as selling agent on the Pacific Coast for Katzenbach & Bullock Co., New York, Chicago and Trenton. The latter concern imports and deals in chemicals, colors and compounding ingredients, making a specialty of supplying the requirements of rubber manufacturers in these materials.

At a meeting of the board of directors of the Rubber Goods Manufacturing Co., Jersey City, New Jersey, held on December 1, 1915, the regular quarterly dividend of 1¼ per cent on the preferred stock was declared, payable December 15 to stockholders of record December 10.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, announces the payment on January 1, 1916, at the office of the Guaranty Trust Co., of New York, 140 Broadway, of the convertible sinking fund five per cent gold bonds of the company, issued and outstanding, under the trust indenture of March 30, 1906. Holders of the bonds who wish to anticipate said date of redemption, may surrender them for cancellation at the above address and will receive, in cash, the face value of their bonds, with a premium of five per cent and interest on such face value at the rate of five per cent per annum, from July 1, 1915, to the date of surrender.

The Converse Rubber Shoe Co., Malden, Massachusetts, has established a western sales department in Chicago, Illinois, with Morton L. Paterson, well known in shoe trade circles, as manager. Premises at the corner of Peoria street and West Jackson Boulevard have been leased for the purpose.

ROBERT BADENHOP, RUBBER DEALER, RETIRES.

The firm of Robert Badenhof, dealers in crude rubber, at 67-69 Wall street, New York, enters into liquidation January 1, 1916, the head of the firm, Mr. Badenhof seeking rest and recuperation of his health, overstrained by close attention to business. The interests of the firm will be transferred to a new corporation, organized for this purpose, of which H. W. Holcombe and Sloan Lamont, Jr., will have the active management. They have both been associated with Mr. Badenhof for several years and are well known in the trade. The title of the new concern will be the Robert Badenhof Co. The offices will remain at the same address and the branch office in the Second National Building, Akron, Ohio, will also be maintained.

TRADE NEWS NOTES.

On application of the president, Wilmer Dunbar, a receiver has been appointed for the Dreadnaught Tire & Rubber Co., Baltimore, Maryland. President Dunbar states that the receivership is only temporary and will in no way interfere with the company's business. Eli Frank has been named as ancillary receiver. The company is a Delaware corporation with \$1,000,000 capital stock.

Music enters conspicuously into the "social uplift" at the Morgan & Wright branch of the United States Tire Co., Detroit, Michigan. With the aid of a player-piano, donated by the corporation, and the musical talent that appears to be well represented in the working force, a daily vocal and instrumental concert is given during the noon hour in the dining room, patronized by some 2,000 employees.

The Cleveland-Ford Tire Co.'s new plant at Ashtabula, Ohio, is reported as progressing steadily. All the foundations are complete, and work will go on rapidly. The main building will be 73 x 182 feet, two stories high, of reinforced concrete with brick facing. Provision will be made for its extension and the addition of a vulcanizing plant. A separate building will accommodate the company's several offices, but an office will also be retained in Cleveland, Ohio.

The Bowers Rubber Works, San Francisco, California, is equipping its plant at Pittsburg, California, with an outfit for making automobile tires.

Toledo Tire & Supply Co., Toledo, Ohio, is enlarging its present store facilities, and will put in a modern multiplex display system.

Leigh-Peck Tire & Rubber Co. will occupy a new building nearing completion on Second avenue, Cedar Rapids, Iowa. The company will handle exclusively the products of the Firestone Tire & Rubber Co., Akron, Ohio, and will control their sale in eight counties adjacent to the city.

UNITED STATES TIRE CO.'S CONVENTION IN DETROIT.

Four days of tire enthusiasm marked the gathering of the salesmen and branch managers of the United States Tire Co., assembled at Detroit, Michigan, during the week ending December 18, 1915, for their regular convention. The tire company's Morgan & Wright plant was the place of meeting, and there J. Newton Gunn, recently chosen president of the company, made the acquaintance of the members of his selling staff, gathered to the number of about 400, from all parts of the country, in spite of storms and snowdrifts.

The convention assembled in Building K of the plant, and among the many interesting addresses, technical or otherwise, C. B. Whittlesey, vice-president of the Hartford Rubber Works Co., read a paper on "The History of Rubber," and Factory Manager McMahan spoke on "How Tires Are Made."

The social features of the convention proved thoroughly enjoyable. They included a business dinner at the Hotel Pontchartrain, and a banquet at the hotel on Friday evening, at which many of the automobile manufacturers were present as guests.

THE GOODRICH "BAREFOOT" TIRE.

A new Goodrich tire has been christened the "Barefoot" and is recognizable by its black tread. This tread or sole of the new tire is made of "hyper-rubber," a compound evolved by The B. F. Goodrich Co., Akron, Ohio. This hyper-rubber tread has a certain amount of stretch, between the outer surface contact with the ground and the inner surface, which is cemented to the cotton fabric. This stretch or "spring," it is claimed, reduces the grind, the frictional heat and wear, between tire and roadway, that is so severe on tires. It is described as lessening the strain on the rubber layers between the fabric occasioned by starting or stopping suddenly. Maximum traction with minimum friction is what the new tire stands for and the manufacturers expect it to result in maximum mileage from every ounce of material used.

EXPANSION OF THE FISK RUBBER CO.'S PLANT.

The Fisk Rubber Co., with the completion of the new buildings in course of construction, will have in its plant at Chicopee Falls, Massachusetts, 29 acres of floor space devoted to the manufacture and distribution of tires. With the completion of the exterior construction, a fair idea may now be obtained of the magnitude of the plant. The new administration building, of stone, steel and tapestry brick, is 50 x 200 feet, and seven stories high; the new mill building of brick and steel, 108 x 60 feet, has five stories and basement; the new storehouse, of reinforced concrete and steel, with brick panels, 108 x 300 feet, has five stories and basement, and there is also a new garage and service station, 60 x 100 feet, with separate accommodations for private cars and trucks. The administration building is unusually complete as to arrangement, equipment, etc. It contains more than 50 office apartments, rest rooms, three dining rooms that will accommodate 200 people, kitchens, refrigerating and ice-making apparatus, etc. With the recent additions, the plant will comprise 20 separate structures, and the output of tire casings alone will be increased to 12,000 per day.

KELLY-SPRINGFIELD REDUCES PAR VALUE OF COMMON STOCK.

At a special meeting of stockholders held in Jersey City, New Jersey, on November 30, the Kelly-Springfield Tire Co., New York, authorized a reduction in the par value of the common stock from \$100 to \$25 a share. This will increase the number of shares outstanding four times. Holders of new common stock will be entitled to one vote for each share of \$25 par value, and, in order to equalize the voting power of common and preferred, the preferred stockholders will have four votes for each \$100 share.

Quarterly dividends of $1\frac{1}{2}$ per cent on the 6 per cent preferred stock and $1\frac{1}{4}$ per cent on the 7 per cent second preferred stock have been declared, payable January 3, 1916, to stockholders of record December 15, 1915.

TO MAKE CRATES FOR TIRE SHIPMENTS.

There is a large demand for crates made of hardwood, for the shipment by freight, or express, of rubber tires. Two of the leading concerns engaged in their manufacture as a specialty, The Steele Bros. Lumber Co., Cuyahoga Falls, Ohio, and the Alderfer Crate Co., Sharon Center, Ohio, have recently combined to form a new corporation, the Steel-Alderfer Co., with a capital of \$50,000. Both companies formerly did a large business with tire manufacturing concerns all over the country, especially those at Akron, Ohio, and the recent destruction by fire of the Alderfer plant made the combination timely and judicious. A large and completely equipped manufacturing plant, of fireproof construction and more than double the capacity of the two former plants, will be erected at Cuyahoga Falls to handle the joint business of the combined companies.

SANITARY SUPERVISION FOR FISK RUBBER CO. EMPLOYEES.

The conservation of the health and hygienic welfare of employees as an important factor in business success, has led the leading rubber manufacturing concerns to devote constantly increasing attention to this important subject. The Fisk Rubber Co., Chicopee Falls, Massachusetts, which is adding extensively to its plant, has not overlooked this important point. Dr. William Hall Coon has been placed in charge of the department of industrial hygiene that will look after the health of the army of Fisk employees. Dr. Coon is admirably fitted by experience and professional ability for this important position. For upwards of eight years he was connected with the State Board of Health as district health officer, during part of the time in charge of one of the most populous districts in the State, where he was constantly in touch with industrial conditions. In supervising remedial and prophylactic work and sanitation at the Fisk plant, he will find a wide field for the exercise of his ability as a physician and in an executive capacity, and the company is to be congratulated on being able to secure his services for this important work.

TRADE NEWS NOTES.

During the past year the McGraw Tire & Rubber Co., East Palestine, Ohio, has established both pneumatic and truck tire branches in most of the principal cities of the United States. The most recent addition is at Detroit, Michigan, located in the Dime Savings Bank Building, and is under the supervision of G. W. Tiffany, formerly with the Gibney Tire & Rubber Co.

The Brooklyn, New York, branch of the Firestone Tire & Rubber Co., Akron, Ohio, will remove soon after January 1 to a building at Sterling Place and Bedford avenue, recently purchased from the Ford Automobile Co. The building will be utilized solely for the distribution of Firestone goods for Brooklyn and Long Island. A portion will be used as a service station, with a complete shop equipment for the repair and application of solid motor truck tires.

The Eastern Rubber Co., 1529 Ridge avenue, Philadelphia, Pennsylvania, which has been experimenting for some time, announces that a compound that makes a perfect inner tube joint, without the use of acid or heat, has been perfected.

An issue of \$850,000 in 7 per cent preferred stock of the Goodyear Tire & Rubber Co. of Canada, Limited—a subsidiary of the Goodyear company of Akron, Ohio—has been put on the market for the purpose of enabling the Canadian company to redeem common stock which is owned entirely by the Akron company. This will give the Canadian company greater financial independence, but the business connection between the two companies will still be continued. The Canadian company was organized to overcome the high tariff rates of rubber goods that are in effect between the United States and Canada.

The Schelp-Budke Tire & Rubber Co., St. Louis, Missouri, has recently acquired the agency in Missouri and Southern Illinois for the pneumatic and solid tires of the Victor Rubber Co., Springfield, Ohio.

The Dry Climate Tire Co., Denver, Colorado, intends to establish a branch plant at El Paso, Texas, for the manufacture of casings and inner tubes for automobiles and bicycles.

The Mason Tire & Rubber Co., Cleveland, Ohio, has decided to locate at Kent, Ohio, and will erect a concrete building with a floor space of 30,000 square feet. The estimated cost is \$60,000.

The plant, property and equipment of The Morgan & Marshall Rubber & Tire Co., manufacturer of automobile tires and tubes, was sold on November 30, to J. C. McLean, president of the M. & M. Co., Cleveland, Ohio, by the receivers. The price paid is stated to have been \$47,600. It is expected that the M. & M. Co., which is a supply house, will take up the manufacture of tires.

The McNaull Tire Co., Toledo, Ohio, whose incorporation was mentioned in the December issue of THE INDIA RUBBER WORLD, succeeds the McNaull Auto-Tire Co. The new company proposes to erect larger buildings and employ 1,000 additional men. W. D. McNaull is the president of the company; M. W. McNaull, vice-president; A. B. Laskey, secretary, and Ole Hibner, sales manager. Mr. McNaull is the patentee of the McNaull boiler, built by the McNaull Manufacturing Co.

The Standard Tire & Rubber Co., with offices in the Hippodrome building, Cleveland, Ohio, and factory at Willoughby, Ohio, is manufacturing a line of tires and tubes with a 5,000-mile guarantee. This is one of the newer companies of the Middle West, and is said to be operated under particularly capable management, as the executive force, factory superintendent, and various heads of departments have had long and successful experience in tire manufacture. The president of the company, Mark Gillen, is well known in rubber circles, having been identified with some of the largest rubber mills of the country for many years.

AN INGENIOUS WINDOW DISPLAY.

A method of displaying goods in a show window that is alike unique, original and calculated to prove profitable to the retailer has been devised by Charles E. Miller, Anderson Rubber Works, Anderson, Indiana. The drum, which we show, is four feet in diameter, octagonal in form, and fills the show window of a 36-foot store, having a display surface of about 432 square feet. The goods are attached to the drum in such a manner as to preserve



REVOLVING WINDOW DISPLAY.

its balance, the figures being so written and displayed as to be plainly legible from outside. Other index figures refer to the bin, etc., in which the article is to be found.

By means of an electric motor, operated from a 16-candle power lighting socket, the drum is slowly revolved, making a complete revolution in about 40 seconds. By this means the display of a large assortment of goods is made possible, while the novelty of the device and the steadily appearing and disappearing lines of goods is certain to attract the attention of the passing pedestrian, with the possibility of its presenting something that he wants.

A CHANGE THAT MEANS EXPANSION.

The Lee Rubber & Tire Corporation, the incorporation of which is noted elsewhere in the present issue of this paper, held a meeting for organization on December 20, 1915, at which officers were elected as follows: President, Albert A. Garthwaite, formerly president of the Lee Tire & Rubber Co., Conshohocken, Pennsylvania; vice-president and chairman of board of directors, John J. Watson, Jr.; assistant secretary and assistant treasurer, William McCaw. The new corporation has acquired all the bonds, and the preferred and common stock of the company it succeeds. The bonds will be retired, and with extra capital, its business in the manufacture of tires, surgical and miscellaneous rubber goods, carried on at its plants at Spring Mill and Conshohocken, Pennsylvania, will be greatly extended, the tire making capacity alone to be increased from 1,500 to 3,000 per day.

GILLETTE SAFETY TIRE CO.'S NEW PLANT.

The Gillette Safety Tire Co., Inc., formerly of Grand Rapids, Michigan, has commenced operations on the erection of a new plant at Eau Claire, Wisconsin. The initial one-story building is to be 60 x 250 feet, of brick and reinforced concrete. It is located and constructed to permit additions being made at any time. The latest improved machinery will be installed, and the initial output will be 100 tires and tubes daily. The company will also manufacture solid tires for trucks and heavy vehicles, and everything in the line of tire accessories. A temporary office has been opened in Eau Claire, with Vice-President H. B. Gillette and Secretary J. S. Wilson in charge.

NEW INCORPORATIONS, WITH AUTHORIZED CAPITAL, ETC., 1915.

Airless Auto Wheel & Tire Co., Inc., The, December 20 (New York), \$10,000. Antonio Martone, Rafele Sciano and J. Russell Borzilleri—all of Rochester, New York. Airless auto wheels and tires.

Ajax Rubber Co., Inc., December 20 (New York), \$5,000,000. Charles E. Lynch, 514 West 182nd street; William J. Jackson, 945 East 18th street—both in New York City; Charles L. Morris, 201 Baldwin avenue, Jersey City, New Jersey. Tires, rubber goods, etc.

Atlas Arabicum Co., Inc., December 1 (New York), \$10,000. J. Blair Cameron and Samuel M. Cameron—both of 49 Broadway; Gustave M. Marcus, 8 Greene street—all in New York City. Rubber and leather goods.

Bond Tire Co., November 12 (Massachusetts), \$100,000. Albert B. Weld, Wilbur M. Doullens—both of 107 Massachusetts avenue, Boston, and Edwin Cook, Danvers—both in Massachusetts. Office, Boston, Massachusetts. To manufacture and deal in tires, tubes, etc.

Bronx Rubber Co., Inc., December 17 (New York), \$5,000. H. K. Halikman, 1209 Bedford avenue, Brooklyn, New York; Isidore Teitlebaum, 446 Westchester avenue, Bronx, New York; and William J. Gannon, 937 East 22nd street, New York City. All kinds of vehicles and motors.

Cassidy Co., Inc., Edward A., December 2 (New York), \$20,000. Edward A. Cassidy, 1022 Pelhamdale avenue, Pelham Manor, New York; George E. Coughlin, 546 Eighth avenue, New York City, and Herbert R. Rising, East Orange, New Jersey. Automobiles, tires, etc.

Lee Rubber & Tire Corporation, December 16 (New York). Robert E. J. Corcoran, 328 Union street, James Gru, 17 Fourth street—both in Brooklyn, New York; Edward Roeder, 366 Teaneck Road, Ridgefield Park, New Jersey. Carry on business with \$750,000. Shares of stock having no nominal or par value.

McTernan Rubber Manufacturing Co., November 9 (Massachusetts), \$150,000. August H. Goetting, Springfield; Lawrence F. Sherman, 249 Castle Road, Nahant; Charles S. Johnson, 44 Breed street, Lynn; Andrew McTernan, Andover, and Osborne R. Witter, Swampscott—all in Massachusetts. Office, Boston, Massachusetts. To manufacture rubber goods, tubing, etc.

Marion Tire & Rubber Co., The, October 9 (Ohio), \$15,000. A. J. Berry, W. H. Holverstott, S. B. Lippincott, N. J. Jones, J. L. Price, W. F. Moyer and R. T. Lewis. To deal in tires and accessories.

Miller Tire Corporation, December 24 (New York), \$2,500. Benjamin F. Bogart, Asbury Park, New Jersey; Wilson R. Hunter, 224 West 105th street, New York City, and Miles P. Gordon, 537 First avenue, Astoria, Long Island, New York. Rubber tires of all kinds.

Morong Shoes, Inc., November 12 (New Jersey), \$25,000. Grace C. Morong, 189 Grafton avenue, Newark; David R. Thomson and Benjamin Thomson—both of 85 Park avenue, Paterson—all in New Jersey. To deal in rubbers, etc.

Nelson Truck Tire & Wheel Shop, Inc., November 24 (New York), \$5,000. Lincoln Tyler, 25 Liberty street, Harry D. Nelson and Jesse L. Nelson—both of 173 Lexington avenue—all in New York City. To manufacture autos, tires, etc.

Parker-Wood Manufacturing Co., October 22 (Massachusetts), \$15,000. Edward E. Wood, Jr., Brookline, Arthur S. Brock, 57 Broad street, Boston; George C. Parker, 339 Lincoln avenue, Cliftondale—all in Massachusetts. Office, Boston, Massachusetts. To manufacture and deal in rubber and rubber goods, etc.

Savage Tire Co., November 10 (Oregon), \$1,000,000. Arthur W. Savage (president), John D. Spreckles (first vice-president); Harry L. Titus (second vice-president), Claus Spreckles (sec-

retary), A. J. Savage (treasurer)—all of San Diego, California. Office Main and Sicard streets, San Diego, California. To manufacture and deal in tires, tubes and accessories.

Schafer-Bowlus Tire & Rubber Co., The, November 12 (Ohio), \$10,000. H. B. Schafer, H. D. Bowlus, William J. Lennon, William Schaefer, and C. A. Suhr. To manufacture and deal in rubber goods.

Transparent Rubber Works Inc., December 7 (New York), \$5,000. Morris Goldman, 1346 Lyman Place, Bronx, New York; Charles G. Newman, 644 Snediker avenue, Brooklyn, New York, and Herman A. Schoenfield, 309 Broadway, New York City. To manufacture rubber goods, druggists' sundries, etc.

Traveller Tire & Tube Co. of New England, November 18 (Maine), \$150,000. Horace Mitchell (president), H. A. Paul (treasurer), M. G. Mitchell (director)—all of Kittery, Maine. Office, Kittery, Maine. To manufacture and deal in tires, tubes, etc.

Yates Tire Co., Inc., December 20 (New York), \$25,000. R. K. Cavanaugh, Ernest F. Talmitch and Garrett Smith—all of Rochester, New York. General tire business.

Yorkville Waterproof Footwear Co., Inc., December 15 (New York), \$1,000. Benjamin Levy, 1728 Second avenue, Morris Sodickson, 1752 Second avenue—both in New York City, and Sophia Gordon, 515 Gravesend avenue, Brooklyn, New York.

REMARKABLE UNIFORMITY IN TWO BIG BELTS.

The two big belts shown in the accompanying illustration were made by Gutta Percha & Rubber, Limited, Toronto, Canada, as part of the belting equipment of the new Government Terminal Grain Elevator at Vancouver, British Columbia, and are claimed



TWO BELTS MADE IN CANADA.

to be the largest ever made in Canada. A remarkable fact in connection with these belts is the uniformity in manufacture they represent. One, 1,410 feet 8 inches in length, weighs 9,421 pounds; the other, 1,411 feet long, weighs 9,423 pounds—a difference in weight of but two pounds, which the four inches difference in length easily accounts for. Considering that each belt was more than a quarter of a mile long and weighed nearly five tons, this uniformity in weight for length is more than remarkable. That it is not merely fortuitous is proved by the fact that in all the 36-inch, five-ply belting, the variation from the manufacturer's average weight did not exceed one per cent, and in the six-ply, did not exceed two-thirds of one per cent. There were three other belts in the outfit nearly as large as those illustrated, and the total net weight of belting furnished on the contract was 52 tons.

Welfare Work in a Modern Rubber Shoe Factory.

WELFARE work in rubber factories has made great progress in the last few years, perhaps as much as in any other branch of American industry.

Take the Hood Rubber Co., as an example. At its great group of factory buildings at East Watertown, Massachusetts, it employs upwards of 4,500 hands. In March, 1911, a welfare department was established for this army of workers. A hospital was first established and placed in charge of a registered physician and surgeon, a graduated nurse and a secretary. This hospital is furnished with all the most approved appliances for the treatment of sickness, accidents and surgical cases, except what are termed major surgical operations. There is, besides the doctor's office, a prescription department, an eye, ear, nose and throat section, an operating room, a dental department, a hospital ward with two beds, and a rest room with two couches.

The dental department has three chairs and is really a branch of Tuft's College dental clinic, and each forenoon an instructor and three advanced students give their services. The Hood Rubber Co. gives the patients their time, and the patients pay only the cost of the material. In the single year this department has been established, more than 1,000 treatments of extracting, filling and cleaning have been given.

In the hospital more than 10,000 emergency treatments were given the first year, and the number increased to 18,000 last year. Of these, two-thirds were medical and one-third surgical. This department is in charge of Dr. R. S. Quinby, a graduate of Tuft's College and Medical School and of St. Elizabeth's Hospital. Dr. Quinby came here four years ago, as assistant to Dr. Dennon, who instituted the department, and succeeded him at his retirement in July, 1914.

A pulmotor provided for asphyxiation emergencies has never been in service and, fortunately, serious accidents have been rare. Safety appliances have been installed, and special attention has been paid to ventilation, lighting and sanitary arrangements; while new employees are given special instructions as to proper care and caution in their work.

All water for drinking purposes is filtered, purified and cooled, and distributed to fountains installed on all the floors. There are rules regarding expectoration. There are rest rooms on each

floor, and three matrons see that all the sanitary rules are enforced.

Lead poisoning is the most prominent danger in the mill room of a rubber factory. Special precautions are taken to guard against this danger. Exhaust fans are placed over each grinder. The floors are wet down before sweeping, and all employees are cautioned to thoroughly cleanse their hands before eating, or before leaving the factory. Every six months those workmen who come in contact with lead, or other deleterious substances or chemicals, are examined thoroughly for traces of poisoning.

Plans are developing rapidly along social, athletic and educational lines. There are two bowling leagues for men, one of 14 teams and another of 12 teams, and a ladies' bowling league of six teams. At the end of the season the company furnishes prizes and provides a banquet at which these are awarded. In the winter there is arranged an elaborate indoor athletic affair for all of the Hood teams, and in the summer a monster picnic to which all of the employees and their friends are bidden.

A mutual benefit association is carried on by the employees, that provides sickness, accident and death benefits. The company has not interfered with this department, believing it to be of educational value to the workers in developing self-reliance.

The large dining room is also used as a meeting place for the

foreign-speaking work-people, where lectures are given in Italian and Armenian languages on American history, citizenship, and other helpful topics. At these meetings an Italian or an Armenian band, composed of workmen in the factory, furnishes music. Stereopticon illustrations usually accompany the lectures.

The indirect result has been better attendance at the evening schools provided by the city, the formation of an amateur dramatic club, and a large number of the foreign born workers have taken out naturalization papers and become American citizens.

The restaurant is a large, well-lighted room with mission tables and seats for two hundred people. The clerical force can obtain at cost a wholesome midday meal prepared in the modern kitchen furnished with the latest up-to-date appliances. The bill of fare is changed each day and the variety comprises appetizing and



OPERATING ROOM, WELFARE DEPARTMENT HOSPITAL.

seasonable dishes. Soups are furnished at 7 cents; cold meats with potatoes, 17 cents; hot roast meats with "fixin's," 23 cents; sandwiches, pies, puddings, tea and coffee, 5 cents.

The restaurant is run on the cafeteria plan (a self-serving system), and employees may purchase a full meal, or any part of a meal from the menu. Those who prefer to bring their lunches are required to eat them in the restaurant, where they have the use of the tables free. This rule is made in order to bring the workers together socially. A secondary result is cleaner offices and less refuse in the waste baskets.



RESTAURANT USED AS LECTURE ROOM.

There is also a private dining room where the heads of departments and the salesmen are served, and where any customers visiting the factory may be invited. Here a course dinner is served. Adjoining this is a rest room with current magazines and the nucleus of a library.

Thus the company is caring for the health and comfort of its employees and the results are mutually beneficial. The workers are healthier and happier, and give more efficient service to their employers.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

EVERY branch of the rubber trade is getting a share of the country's prosperity. In many lines production slows down the last two weeks in the year, but instead we hear of cases where demand is making overtime necessary. The clothing business is one of these, and the leading companies have orders enough ahead to keep them running full time, and also immediate or delayed orders which make full output imperative. Rubber heels and soles are in demand, and one company, at least, is working nights, and even holidays to keep abreast of orders. The mechanical goods people usually slow down the whole month of December, but the month just closed has proved a notable exception. The demand for rubber belting is greatly increased by the tremendous advance in leather belting costs, though this is in part supplied, where applicable, by rope transmission. Druggists' sundries manufacturers are about as busy as usual at this season. They have had good business, but it generally drops off about the first of December, to start up again after the year is really going. Boot and shoe men had an unusual streak of business the middle of the month, when a big snow storm made a consumer's demand which caused the shipping forces of the wholesale houses several nights' extra work.

As is very generally known, the Stoughton Rubber Co. and the American Rubber Co. are subsidiary to the great United States Rubber Co. Following the newly established policy of

concentration, these two companies have been merged into one big corporation, which will continue to run the rubber clothing factories in Cambridge and in Stoughton, but will consolidate the sales departments into one, centrally located and fully equipped for carrying on the combined business of the two companies. The same officers will manage the business, which is expected to be the most complete, best systematized organization in this line in the United States. The goods will be sold under the same trade brands, namely Stoughton Rubber Co., American Rubber Co. and Boston Rubber Co. The location for the new selling department has not yet been decided upon, but will be at some point in the district where large buyers congregate, who visit the clothing trade.

The Stoughton Rubber Co. has for years been the Boston agent for the New York Belting and Packing Co., and this agency occupies one half of the large floor at 232 Summer street. Now that the previously mentioned merger is practically effected, the New York corporation will take over the management of its Boston business, and this will be transferred to some new location as soon as the right one is found.

One of the special advantages of the United States Rubber Co.'s consolidation of the boot and shoe units of distribution in Boston under one roof was proved during the middle week of last month, when the storm caused such an influx of rubber shoe orders that only a thorough system enabled Manager Porter to get out the goods with the despatch demanded by the emergency. For instance, on Friday, the 17th, nearly one thousand different shipments were packed and sent out, and these lots were considerably larger than the average orders. This company has an immense store and storehouse of ten large floors, and the shipping department is proving its efficiency in busy times.

The storm emphasized what was most evident for weeks before it happened, namely, the vexatious delays caused by freight congestion. Both shipments and deliveries have been so delayed as to cause actual loss of business, supplies failing to arrive when expected, and the car shortage interfering with the forwarding of orders. The Monatiquot Rubber Co., at South Braintree, solved the shipping problem most satisfactorily, by trucking their goods over the road to Boston, and shipping by boat to their customers who could be reached advantageously that way. Mr. Turner is in receipt of several most commendatory letters because of this accommodation to the customers of the company.

The last week in December was a busy one with the branch store footwear salesmen of the United States Rubber Co. They gathered from Omaha, St. Louis, Indianapolis, Des Moines, St. Paul, Milwaukee, Chicago, Detroit, Toledo, Columbus, Pittsburgh, Rochester, Buffalo, Syracuse, Baltimore and New York, meeting in Boston on Tuesday, the 28th.

On that day the salesmen selling "American" rubber shoes visited the mill at Cambridge, and the Banigan men proceeded to Woonsocket. The next day they visited the National mill at Bristol.

The Candee, Hubmark and Wales-Goodyear salesmen inspected the Bristol factory, Tuesday, and their respective factories in New Haven, Malden and Naugatuck on Wednesday.

Thursday the clothing salesmen had a session at the American mill in Cambridge, and after a lunch at the American House, the afternoon was spent there at a business meeting.

Thursday night a reception was given to Colonel Colt, followed by a dinner in the great banquet hall of the City Club, at which nearly 500 were present. Felicitous addresses were made

by President Colt and by J. Newton Gunn, George H. Mayo, William E. Barker, E. S. Williams, Harry B. Hubbard, Charles C. Chase, Raymond B. Price, George W. Perry and Homer E. Sawyer.

Every participant in this conference was presented with a handsome gold badge, a *fac simile* of the trade-mark of the company.

The whole affair was a most successful one. All present were filled with enthusiasm as they left for their homes, determined to beat their last year's record.

Another event in the rubber footwear trade was the dedication of the new building recently added to the Apsley Rubber Co.'s plant at Hudson, which occurred too late to be fully chronicled here. The event was celebrated by a banquet, and a ball, in which all the employees of the company were invited to participate.

Owing to the demand for rubber heels and soles, I am informed that orders were so heavy and so pressing that the B. & R. Rubber Co., of North Brookfield, asked many of its employees to work Thanksgiving Day, paying extra wages to those who availed themselves of the opportunity. The busy season continuing, the workers themselves asked permission to put in Christmas Day at the factory, an offer gladly accepted, Mr. Richards promising to pay them double wages for this extra time, they to work ten hours and receive pay for two 12-hour days.

The creditors' committee of the Walpole Tire & Rubber Co. announced the sale of the land, buildings and equipment of the company at Walpole and Foxboro, Massachusetts, to the Standard Woven Fabric Co., Framingham, Massachusetts, for \$188,000, which was to be paid on or before December 15, 1915. The Standard Woven Fabric Co. issued \$500,000 worth of 6 per cent preferred stock, to pay for the plant and take care of re-equipment for its purposes, and the entire issue was promptly underwritten. The Walpole plant includes 70 acres of land and 16 buildings, having 175,000 feet of floor space. It will be utilized by the purchasers in the manufacture of Multibestos brake lining and other specialties. Eventually the company expects to erect additional buildings, consolidate its business at Walpole and dispose of the Framingham property.

As a result of an all around increase in its business, the Empire Rubber & Tire Co. has removed its headquarters to more commodious accommodations in the large, new fireproof building at 179 Massachusetts avenue.

In the suit brought by the Boston Rubber Shoe Co., which applied for an injunction to prevent the State treasurer, the tax commissioner and attorney-general from taking steps to enforce payment of an additional tax of \$40,161.99, levied as a franchise tax, as reported in THE INDIA RUBBER WORLD of December 1, Judge Pierce, in the Supreme Court, dismissed the bill applying for the injunction, on the grounds that the company could raise the question as to the constitutionality of the statute under which the tax is assessed in defending the proceedings which have been commenced by the State officials above mentioned, to enforce payment of the tax.

This year's annual meeting and dinner of the New England Wholesalers' Association was held at Young's Hotel, on December 8, 1915. The usual annual reports were presented and officers elected for the ensuing year. One of the post-prandial orations was an interesting address by William E. Barker, manager of sales of the United States Rubber Co., who recently returned from a business trip to Europe and spoke on the subject of "Rubber Trade Conditions at Home and Abroad."

Bankruptcy proceedings were instituted against the Columbia Rubber Co. on December 22, by its creditors. The claims of the petitioners amount to \$2,140.79.

E. S. Kidder, manager of the United States Tire Co., in this city, attended the conference of the branch managers in Detroit.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

THERE is a seeming incongruity in the statement that an unusual degree of prosperity caused the shutting down this week of the Ajax Rubber Co.'s plant and two departments of the John A. Roebling's Sons' Co., yet such was the case. The odd situation was brought about by the congestion of the freight yards and tracks in and around Trenton, preventing the movement of carloads of coal destined for the establishments referred to. Operations have been resumed, however, at both the Ajax and the Roebling plants and they are unusually busy. Not in many years have the railroads been so severely taxed to take care of both incoming and outgoing shipments of raw materials and manufactured goods. The rubber manufacturing companies are seriously inconvenienced by existing freight conditions. Recent orders of the Pennsylvania Railroad Co. prohibit the agents from accepting consignments destined for New York with the exception of foodstuffs. In many sections not a train of cars can be moved, and it is estimated that 20,000 loaded cars are blocked on the tracks between Jersey City and Pittsburgh. Trenton rubber manufacturers generally agree that 1916 holds promise of unusual prosperity for the trade, as many substantial orders for next year have already been booked.

The Ajax Rubber Co. has been incorporated, under the laws of New York, with a capital of \$5,000,000—all common stock of \$50 per share par value—to take over the business of the Ajax-Grieb Rubber Co. Of the total stock, \$3,000,000 will be issued at once to exchange for outstanding Ajax-Grieb shares, and of the remainder, part will be sold and the proceeds employed in enlarging the Trenton plant. It is stated that this company's contracts, with 300 dealers, aggregate \$3,000,000, and for the period ending August 30, 1916, gross sales of \$4,500,000 to \$5,000,000 and net earnings of \$750,000 are predicted. The company's annual earnings for four years ending August last, approximated \$450,000, equivalent to \$7.50 per share on the stock.

The Essex Rubber Co. announces that the department in which condensite was manufactured has been sold to the Pouvaill-Smith Corporation, Poughkeepsie, New York, organized with \$2,500,000 capital by J. Wilson Poucher, Elias C. Vail and Grant E. Smith, all of Poughkeepsie, to manufacture electrically heated steering wheels for automobiles and other automobile parts. The transaction was prompted by the fact that this department had outgrown the accommodations the Essex Rubber Co. were able to afford it. The Pouvaill-Smith Corporation will have the best of manufacturing facilities, and H. S. Morgan, manager of the department for the Essex company, goes with the new company as factory manager, besides being interested in the corporation financially.

The Roebling plant, which was recently visited by a very disastrous fire, was again threatened this week when a blaze was discovered in one of the cleaning departments. The prompt discovery of the blaze was all that prevented a serious conflagration, as the flames were making rapid headway when the alarm was turned in.

General C. Edward Murray, head of the Empire Tire Co., was one of the leading contributors to the poor children's Christmas Fund raised in Trenton.

Alfred Whitehead, secretary of the Whitehead Brothers Rubber Co., has taken possession of his new \$15,000 home on Perdica avenue in this city.

C. C. Ferry has been appointed sales manager of the Delion Tire & Rubber Co., and will make his headquarters at the Trenton factory.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THE big Auto and Industrial Show held at the Akron Winter Garden, December 11 to 18, 1915, evidenced in highly attractive form the growth and prosperity of this exceedingly live town. This exposition, which was the second annual affair of its kind, outrivaled the one of the year before—a natural sequence to the immense growth, during the intervening period, of the industries represented. The attendance also was doubled, and the scheme of lighting, the decorations, the exhibits and their arrangement, all received most favorable comment.

Akron rubber men concur in the widely prevalent report of an early rise in tire prices. As all the materials have gone up in price, if quality is to be maintained the completed product will naturally share in the upward tendency.

This picture shows the present plant of the Firestone Tire & Rubber Co., covering 31 acres of floor space.

The original Firestone factory was built in 1902. The entire office force then consisted of H. S. Firestone and six others. Now, over 700 persons are required to handle the office work of the company, while the total of officers, department heads, branch managers, superintendents and other helpers connected with the organization reaches 6,000.

In the last four years, since the new factory, consisting mainly of four large wings, was built, the race between production and demand has necessitated constant additions to the plant. Last year alone showed an increase in output of 78 per cent. Among

On December 16, 1915, in the Court of Common Pleas, Cuyahoga County, Ohio, the Firestone company was granted a perpetual injunction against a raincoat company using the name "Firestone." The raincoat company was operating stores under the name "Firestone Raincoat Co."

The American Hard Rubber Co. has sold the factory building and site where it has been located for so many years to The B. F. Goodrich Co. This transaction was recently consummated and will necessitate a change in the original plans for the new buildings now being erected at East Akron for the American Hard Rubber Co. Two buildings, 400 x 50 feet, will be built, according to the most approved ideas of modern factory construction, and possibly further additions will be made to accommodate the removal of the entire plant from its historic home.

It is estimated that the business of The B. F. Goodrich Co. has expanded in a remarkable degree—150 per cent increase since 1912. The regular quarterly dividend of 1¾ per cent has been declared, payable January 1 to holders of record December 1, 1915. Further action on dividends is anticipated early in the year.

The Goodrich company had the honor of supplying trucks equipped with Goodrich safety tread tires to convey the famous Liberty Bell to and from the special cars in which it traveled to the San Francisco Exposition and down to the San Diego Exposition. The ancient and honored emblem is now at rest again in Independence Hall, Philadelphia, after a triumphant and much lauded journey.

The Akron Pigment Co. is making a filler of recognized excellence, which is extensively used in rubber mills all over the world. The company has a substantial gray stone plant on Miller avenue. George Probert, general manager, has an extensive acquaintance throughout the trade in the United States and Canada, and excellent connections in Europe.



PLANT OF FIRESTONE TIRE & RUBBER CO., COVERING 31 ACRES OF FLOOR SPACE.

the most recent extensions are those on three of the big main wings, and the doubling of a six-story separate factory building.

The three-story club-house which is being built for employees will contain every modern facility for the comfort and pleasure of its users, including a large swimming pool, bowling alleys, barber shop, shower bath and lockers in the basement, and club rooms and a large auditorium on the top floor, which can be used as a theater, assembly hall, dance pavilion, etc. The two intermediate floors are equipped as restaurants for the factory and office force.

The completion of the additions now in progress will allow for an increase in tire output from 7,500 to 12,000 per day.

The distinctive trade-mark of the latest Firestone tire is a black tread combined with a red side wall.

The Lincoln Rubber Co. has purchased the plant and furnishings of the Summit Rubber Co. at Barberton.

The Star Rubber Co. recently obtained a permit to add a \$30,000 building to its present plant. This extension means employment for 50 more men.

The Mohawk Rubber Co. celebrated the opening of its new factory building by a Christmas dance, held on the third floor of the factory, December 28, 1915.

At a luncheon given by the Akron Automobile Club at the Hotel Portage, December 14, 1915, attended by many well-known automobile men, C. R. Raymond, of The B. F. Goodrich Co., acted as toastmaster.

Herman Haase, rubber testing expert of the Goodrich company, gave an interesting lecture on "Crude Rubber" before members of the Akron Real Estate Board at their luncheon on December 7.

On the theory that some inducement should be given for exercise of brain as well as body, J. P. Loomis, director in the Goodyear Tire & Rubber Co., and trustee of the University of Akron, has donated a solid silver trophy cup, to be awarded to the high school whose students make the best showing in grades during their freshman year at the University of Akron. The cup will become the permanent property of the school which wins it five times.

At the annual meeting of the Goodyear Tire & Rubber Co. held at Akron, December 4, 1915, there were several promotions among the staff. S. M. Stadelman and P. W. Litchfield were elected vice-presidents, continuing in their former positions as sales and factory managers; H. J. Blackburn was made second assistant treasurer, and A. F. Osterloh, formerly assistant secretary, was elected secretary. He is also assistant sales manager.

Following is the balance sheet of the Goodyear company, as compared with that of the previous year:

ASSETS.		1915.	1914.
Real estate and buildings.....		\$3,883,946	\$3,606,537
Machinery and fixtures.....		3,962,260	3,208,107
Patents, trade marks, etc.....		1	1
Securities owned.....		809,326	777,649
Preferred stock purchased.....		258,459	343,593
Notes receivable of officers, employees, capital stock.....		1,045,816	805,283
Inventory.....		7,763,189	4,567,460
Accounts and notes receivable.....		4,759,246	3,328,693
Advances to agents, etc.....		278,070	280,655
Cash on deposit.....		1,766,352	2,862,706
Advances to Goodyear Imp. Co. and Goodyear Heights Realty Co.....		1,047,661	885,315
Suspended assets.....		334,067	440,438
Prepaid rentals, etc.....		371,529	352,893
Total.....		\$26,279,927	\$21,459,335
LIABILITIES.		1915.	1914.
Preferred stock.....		\$6,650,000	\$7,000,000
Common stock.....		8,377,200	7,991,110
Purchase accounts payable.....		1,565,705	410,575
Sundry accounts payable.....		378,894	257,509
Res. for doubtful accounts.....		558,956	564,327
Depreciation of plant.....		1,717,230	1,183,418
Surplus.....		7,031,940	4,052,395
Total.....		\$26,279,927	\$21,459,335

Plans are in progress for three more additions to the Goodyear plant: a five-story factory, 60 x 150 feet; a garage for employees' automobiles, 105 x 60 feet, and a three-story time office, 60 x 20 feet. The basement of the time office will be used for shower baths, toilets and wash rooms, the upper floor for a restaurant and rest room. The estimated cost for these additions is \$110,000.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE year that has just closed will be recorded as one of the most notable in the history of the rubber industry of Rhode Island. There has been no time during the entire twelve months of 1915 when the rubber factories of the State have not been rushed to their fullest capacity, or when there has been a sufficient number of skilled employees to fill all demands for help. While the regular volume of business indicated conditions that would have afforded the various factories ample employment for a normal force and schedule, the extraordinary volume of war orders from Europe increased the demands upon the plants to an extent never before equalled.

Those factories manufacturing rubber boots, secured numerous large-sized orders from Europe early in the year, so that many of the regiments composing the forces of the Allies were supplied with Rhode Island boots for trench work, orders for which have been duplicated in a majority of instances. For several months, during the earlier part of the year, the factories were handicapped to a greater or less extent by the embargo

that was placed on plantation rubber, but this was modified later, so that the local factories had little difficulty in securing all the rubber they needed.

During the year several of the mills have been enlarged, and in all plants there have been extensive alterations and improvements. At the present time the different concerns are working on a full-time card, or better, in nearly every department, and the outlook is said to be good. Evidences of this are seen in the fact that none of the plants were closed for the Christmas holidays, as has been the custom for many years. In some instances the number of orders on hand is sufficient to maintain a full working schedule for several months to come.

One feature of this unusual activity among the rubber factories located at Bristol is the increasing dearth of suitable tenement houses and boarding places for the employees. There are no houses for rental, and an unusually large number are contemplating building homes for themselves. The necessity for more houses is seen each morning in Bristol when large numbers arrive from Warren, Riverside, Barrington and other neighboring places.

Recognizing the lack of accommodations, the officials of the National India Rubber Co. several months ago leased the De Wolf Inn—a large hotel that for several years was used as a summer resort—and had it fitted and equipped as a boarding place for their women employees who were not otherwise provided for. Thus suitable accommodations were afforded for nearly 75 operatives and the experiment has proven a success, both for the corporation and the operatives, and has gone a long way toward solving this difficult problem.

The plant of the National India Rubber Co. at Bristol was the scene, on December 28 and 29, of a meeting of the salesmen of the United States Rubber Co., when upwards of 400 representatives from the different branches in the United States gathered to attend the meetings arranged at the big factory by Vice-President LeBaron C. Colt and other officials.

Rooms at the plant had been fitted up for the display of the many styles and qualities of goods, including sporting and outing shoes and insulated wire, manufactured by the company. Here the sessions were held and, following inspections of the various lines, the managers and other representatives of the various sales departments connected with the United States Rubber Co. addressed the men, with the view of making them better acquainted with the processes of manufacture, from the beginning to the shipping of the finished products.

One of the most important and interesting features of the meeting was a tour of the big plant, conducted by the officials, which gave the visitors a closer acquaintance with the goods they sell. All of the methods, machines and processes of making, from the raw material to the finished product, were explained.

A few days before Christmas, the employees of the National India Rubber Co. contributed \$788.08 as a donation to the poor and unfortunate in Bristol. This money was distributed through the various charitable organizations and clergymen of the town, irrespective of denomination.

The following is the detailed list of the different departments, together with the amount contributed, from each department: Officers, \$50; office, \$18.75; gaiter and quarter room, \$230; calendar room, \$23.05; shipping department, \$13.60; cutting room, \$17; yard, \$19.50; heater room, \$10.35; shoe department, \$114; night gang, \$10.75; watchmen, \$3.50; stitching room, \$127.85; packing room, \$24.50; check room, \$10; machine cutting department, \$9.25; printing department, \$15.13; carpenter shop, \$12.10; machine shop, \$5; engineers and firemen, \$5.50; wire department, \$68.25; total, \$788.08.

A final meeting in bankruptcy was held a few days ago in the case of Edward R. Young, retailer in rubber goods in this city, and the trustee, Norman S. Case, was discharged, the creditors having received 2½ per cent.

ANNOUNCEMENTS FROM THE RUBBER CLUB.

DELAYS in shipments to neutral European countries, complained of by American exporters, are often due to neglect of the shipper to carefully observe directions, especially in the preparation of the invoices that must accompany the application for permission to ship. Trade terms and abbreviations—sometimes, in the case of druggists' sundries, for instance, comprehended only by the trade, must not be used; weights and values must be given according to British as well as American standards. The English hundredweight, for example, is 112 pounds, and both English and American hundredweights, as well as pounds sterling and dollars and cents, should be shown on the invoices. Six copies of these invoices are required by the British War Trade Department and should be made out at once to meet the British departmental requirements. If these conditions are not carefully observed, a delay of a month, at least, is inevitable in obtaining the license applied for.

In the case of rubber goods destined for Sweden, annoying delays were often reported. These, it was ascertained, were due to the anxiety displayed by Great Britain that such goods should not be re-exported to enemy countries. A certificate from their governments to this effect was in many instances required. This source of trouble has in large part been obviated, but manufacturers should scan, with the greatest care, all orders received from neutral European countries, in order to avoid violation of the bonds and agreements into which they have entered.

Attention of rubber manufacturers is called to the fact that the British government has ruled that Madeira and the Cape Verde Islands, Portuguese possessions off the African coast, must be regarded as neutral European territory when making shipments of rubber goods. Accordingly, all consignments for these islands must be shipped in the usual manner, by way of the United Kingdom.

To Gibraltar and Malta, shipments may be made without restrictions, in the same way as to any non-European possessions.

Licenses to ship rubber goods to neutral countries being good for six weeks from the date of issue, it is advisable to make application in advance, as, should the time expire, an extension will be granted. Licenses are obtainable only from the War Trade Department, 4 Central Building, Westminster, London, S. W., England, and applications should be filed there, with invoices and all the evidence required to prove the ultimate destination of the goods. They will be dealt with strictly on their merit and in consecutive order.

When the license is granted, the London agent, or forwarding agent, should at once cable the fact to the manufacturer, so that there may be no loss of time in obtaining cargo room and making the shipment before the license expires.

Arrangements are being made whereby the granting of licenses for tire equipments for automobiles shipped to Europe will be greatly facilitated.

"RUBBER CLUB DAY" IN NEW YORK.

The Rubber Club of America, Inc., and the various divisions, are to hold their annual meeting and dinner at the Waldorf-Astoria, New York, on January 28, and President Hodgman would like to distinguish the day in question as "Rubber Club Day" in the annals of the city and the trade.

The meeting of the Mechanical Rubber Goods Division and Rubber Sundries Division, will be held at the hotel in question at 2 p. m. At 4 p. m. at the same place, will be held the meeting of the Rubber Club of America, Inc., and at 5 p. m. the meeting of the directors of that organization will be held. At 7 p. m. the dinner of the Rubber Club will take place in the Astor Gallery and Myrtle Room of the hotel. Every effort is being made to insure an unprecedented success for both meetings and dinner,

and if a large attendance, an attractive program and interesting speakers may be regarded as factors, it is already certain. The key note of the occasion will be American patriotism and American rubber industry. Members of the Rubber Club are earnestly requested to remember "Rubber Club Day," January 28.

RUBBER CLUB DIRECTORS FOR 1916.

The Nominating Committee of The Rubber Club of America, Inc., met at the Union League Club, New York, December 9, 1915, at 3:30 p. m. Those in attendance were: Homer E. Sawyer, chairman; Charles T. Wilson, Henry C. Pearson, Russell Parker; Bertram G. Work, being absent, was represented by Howard E. Raymond. The following nominations were unanimously made:

DIRECTORS FOR 1916.

Van H. Cartmell, New York City.
William E. Bruyn, New York City.
J. S. Lowman, New York City.
W. O. Rutherford, Akron, Ohio.
George E. Hall, Boston, Massachusetts.
F. W. Litchfield, Akron, Ohio.
Henry Spadone, New York City.
Charles T. Wilson, New York City.
H. Stuart Hotchkiss, New Haven, Connecticut.
William J. Kelly, New York City.
Frederick H. Jones, Andover, Massachusetts.
Harvey S. Firestone, Akron, Ohio.

These nominations will be voted on by members of the Rubber Club at the annual meeting, January 28.

DELEGATES TO INTERNATIONAL TRADE CONFERENCE.

The following delegates were appointed by The Rubber Club of America, Inc., to attend the International Trade Conference, held under the auspices of the National Association of Manufacturers of the United States of America, at the Hotel Astor, December 6, 7 and 8, 1915: William G. Grieb, Ajax Rubber Co., Trenton, New Jersey; J. A. Lambert, Acme Rubber Manufacturing Co., Trenton, New Jersey; Henry D. Reed, Bishop Gutta Percha Co., New York; Russell Parker, Parker, Stearns & Co., Brooklyn, New York.

A HARMLESS POLICE CLUB.

The invention of a rubber-covered police club is reported from Christiania, Norway, on which a United States patent has been granted. Unlike a somewhat similar device, a description of which appeared in THE INDIA RUBBER WORLD of January 10, 1897, and which consisted of a practically rigid core of hickory encased in rubber, the present device, which is the invention of a Christiania policeman, has a flexible metallic core of cabled wire, terminating in ferrules, covered with rubber or gutta percha. Such a baton, in the hands of a stalwart policeman, is capable of delivering a stunning blow, without causing wounds or broken bones. Thus, while more effective, it is more humane than the weapon with which the policemen in large cities are usually equipped. The police force of Christiania now carries the Wel-fens club, the patent on which is controlled by Anthon Berg, 72 Munkedamsveica, Christiania, who is connected with the rubber and balata interest in that city and who is desirous of exploiting the patent or selling rights for the United States, Canada and Great Britain.

THE AUTO SHOW FOR 1916.

The Grand Central Palace, New York, is to be transformed, for the Annual Automobile Show, to be held there during the week commencing December 31, into the "Palace of Motoria," the goddess who watches over the destinies of the automobile and its votaries, and will present a gorgeous spectacle. The technical features will be in keeping with the decorations and everything new and meritorious in automobiles and accessories will be on exhibition, displayed in the artistically accessible style to which the building so admirably lends itself. The show opens on the evening of December 31 and will remain open for a week.

The India Rubber Trade in Great Britain.

Our Regular Correspondent.

FOR some time most of our large cable works have been on the list of controlled works under the Ministry of Munitions. Now, in addition, some of the large rubber works—notably, the Dunlop Rubber Co. and the North British Rubber Co.—have been added to the list. This means that government work and demands have priority over private business and, further, that strikes are not allowed, and that work-people who lose time or transfer their services elsewhere are to be dealt with by the local munitions tribunal and not by the management of the rubber firm. Again, with regard to recruiting such men as are considered indispensable to the business of the controlled works: they are “starred,” as unavailable for enlistment. Outside the above, the rubber firm maintains its individuality and carries on its business as usual, with the exception of having more or less prolonged visits from government officials on much the same lines as have long been laid down in the government specifications for rubber goods.

Certain firms making necessary chemicals for the trade have also been recently put on the controlled list. The effect of this has been to increase the difficulties previously experienced by rubber works not engaged on government work in getting their supplies; or, if they get them, it is at an increased cost. It does not appear that the fact of being controlled is looked upon in the light of a hardship. It is rather the other way, as the firms have less to apprehend from the natural and necessary visits of the recruiting officers as regards depletion of staff.

With regard to the general volume of business being done, one hears but little in the nature of complaint. The transit difficulty, however, is still acute, abnormal time being required for the delivery of raw materials and finished goods which have not the right of being labeled “on government service”; and there is no present prospect of a better state of affairs.

The main feature with regard to raw rubber has been the rapid rise towards the end of November to 3s. 7½d. per pound. This rise is due to the shortage of rubber for immediate delivery, combined with an uneasy feeling among manufacturers as to impending greater difficulties at the docks and on the seas, and it is generally expected that a 3s. level will be maintained for some time. There has been considerable activity lately in obtaining permits in London for direct shipments of rubber from the Far East to America, both by the New York and San Francisco routes. With the collapse of the German export trade and the restrictions which hamper the French output, it is not surprising that British manufacturers have received inquiries and orders on a greatly increased scale from practically all over the world. To such an extent is this the case with some of the more prominent firms that new business is not keenly welcomed. In fact, some important orders have only been accepted on the terms that cash must be paid before delivery and that no complaints can be considered if the goods do not come up to expectations. The principle of attending to the wants of old and regular home customers first is being strictly adhered to, as it is well recognized that the panic buying from new customers abroad is only because the latter cannot get the goods elsewhere and that in the future they will revert to their old channels of supply. With regard to sporting requisites, although the home demand has certainly fallen off, I am informed that the business done for abroad shows little diminution, so that the rubber manufacturers are not suffering, whatever may be the case with the home shops and stores which specialize in the retail sale of such goods. And although it may be a fact, stated in THE INDIA RUBBER WORLD for Sep-

tember, that England has lost half her export rubber trade, the very satisfactory state of business reported all around shows that the loss is not felt.

RECLAIMED RUBBER.

All permits to ship reclaimed rubber to Sweden were withdrawn in October, but from negotiations which are now proceeding, it is considered probable that this restriction will be shortly withdrawn.

An interesting and informative article—as far as the general public is concerned—on reclaimed rubber appeared in “The Engineer,” of London, on November 5. Attention is drawn to the fact that by the introduction into England of the alkali process as worked on a large scale in America, the British reclaiming industry has now developed very largely and is a much more important and progressive business than was the case 20 years ago.

GOLOSHES.

The winter has set in exceptionally early this year in Great Britain, and to judge by reports, severe weather has been very general on the Continent at an unusually early date. We have had heavy snowfalls, and skating on the deep Cumberland lakes in November, so that the prospect of a good season for such goods as goloshes and overshoes is assured. With regard to the source of overshoes, competition is keen between the home-made article and the imported American, which has strong adherents, not altogether due, I must confess, to its having been longer in the field. Overshoes are now generally stocked by shoe stores, as well as by the shops which deal in rubber goods only, and in nearly all cases both the British and American makes are on sale. Similar sizes and makes for men cost 5s. for American, or “Bostons,” as they are usually termed, and only 3s. 11d. for British. In women’s goloshes, the prices are 3s. 6d. and 2s. 11d. A popular make for women is that furnished by the Bay State Rubber Co. at 3s. 6d. It is somewhat lighter than the British and, like other Boston makes, can be obtained in half sizes. This matter of half sizes, which seems to have been ignored by British makers, is undoubtedly in favor of the sale of “Bostons,” both for men and women.

HOT-WATER BOTTLES.

So as to neutralize any possible further straining of the present relations between Great Britain and America, which might be apprehended from the remarks on goloshes, I now refer to an article in which the trend of public opinion is in the reverse direction. This is the hot-water bottle which, after being under a cloud for a few years, seems to have quite regained its former popularity. This is in a large measure due to the prevalence of hospitals, both military and Red Cross, up and down the country. Although some of our largest rubber manufacturers still announce that while their bottles are of the highest quality, they give no guarantee against bursting, others have modified their attitude in this respect and plenty of bottles are on sale bearing guarantees. The retail prices range from 4s. 6d. to 6s. 6d., according to sizes of 8 x 6 inches to 12 x 10 inches. Lower-priced bottles are not guaranteed. The rubber stores complain that discredit has been brought upon the goods owing to druggists putting them in the windows until decay is setting in and then getting rid of them quickly by lowering the price. This sounds quite probable, but there has also been carelessness on the part of purchasers, both in using boiling water and leaving them lying about anywhere. Instructions are now issued by the retailers with regard to proper use and storage. The complaint about the American hot-water bottles is with

regard to the seams, the overlap being one-quarter inch as compared with the customary one-half inch of the British makes. A point to which considerable importance is attached in the hospitals is the fitting of the stopper with a small washer, this having frequently been overlooked in the past. To refer to a matter of history, I may say that the interruption of the British business was due to a legal action a few years ago, when the chemist who sold a defective hot-water bottle was mulcted in damages resulting from its bursting when in use.

TRENCH CAPES AND STOCKINGS.

Trench capes are in considerable demand from the men at the front. The garment may be described as a general utility article that a man in the trenches would be likely to find handy. Besides being a good waterproof cape, it can be made to serve as a waterproof sleeping bag, a ground sheet, and a supplementary kit bag or "hold-all." Large numbers have been ordered by the government and issued to the men, but many requests are being made by the men to their friends at home to send them a "trench cape" and there is consequently a large demand for them. Leg boots are being sent out in large numbers on the same plan, and Charles Macintosh & Co., Limited, are making a waterproof stocking for the protection of the soldier in the wet trenches, to sell at 14s. 6d. per pair.

RUBBER ERASERS AND STAMPS.

German compulsory withdrawal from the rubber eraser business has furnished an opportunity to British firms, who have not been slow in stepping into the breach. One concern, the Mountford Rubber Co., Birmingham, has introduced a triple-layer eraser in red, white and blue rubber, the patriotic colors greatly encouraging to the sales.

Rubber stamp manufacturers also have not been backward in taking advantage of the war situation. "War emergency stamps" in infinite variety have been turned out, which some day may have special value to the collector of "curios." Here are some of the legends borne by standard stamps, impressions of which are becoming common on business documents: "This quotation is not binding"; "Business as usual"; "Do please help us and remit by return"; "The crisis has hit us hard"; "Owing to the present circumstances, we cannot commit ourselves in any way"; etc., etc.

NEW WORKS.

The company which has for some time been exploiting the John Bull tire, which has been manufactured at various rubber works, has now started manufacturing on its own account. The works are known as the Leicester Rubber Co., of the Granby Rubber Works, Post Office Place, Leicester. H. H. Burton is the managing director and Mr. McGhee the manager. The machinery, which is new throughout, is electrically driven. A sort of tram tire used for hand trucks is one of the specialties of the company.

PERSONAL MENTION.

J. Martindale Davies, late works manager of the New Liverpool Rubber Co., Limited, has now taken up a position at the works of J. Lyne Hancock, Limited, Goswell Road, London.

Lieutenant-Colonel Fallows, of the Leyland & Birmingham Rubber Co., who was killed at the Dardanelles, has been accorded the posthumous honor of being mentioned in dispatches by General Sir Ian Hamilton.

Sir Frederick Smith, Baronet, chairman of Charles Macintosh & Co., Limited, has been appointed to represent rubber and banking on the Manchester Recruiting Appeals Tribunal. This body has the duty of deciding *inter alia* as to which men are to be considered as indispensable for the carrying on of home industries during the war.

The new 2½-ton commercial car built by the Wells Motors, Limited, England, has many interesting features. One in particular is that rubber-impregnated canvas is used for the universal joint.

UNITED STATES ENGLAND'S BEST RUBBER CUSTOMER.

At a recent annual meeting of an English rubber plantation company, the chairman gave some interesting details concerning the export of rubber from the United Kingdom, together with its approximate value. On this point he spoke as follows:

It is perhaps not generally recognized what an important factor rubber is in our exports to America and in assisting to adjust the exchange with that country at the present time. The amount of rubber exported from the United Kingdom to the United States last year amounted to nearly eight millions sterling, and if that going direct from the Middle East is added, the total reaches between ten and eleven millions. In the first case it represents about one-sixth and in the latter one-fifth of the total exports from this country to the United States. Rubber is two and a half times the value of any other item in the list of our exports to America, and occupies the fourth place in value among the imports of the United States from the whole world. Probably about 70 millions of British capital is invested in the rubber industry in the Middle East, and although at the present time not more than about half of this large capital outlay is productive, it will return for the present year produce of the value of from 18 to 20 millions sterling. The development of the plantation rubber industry and the investment of this capital in the Middle East has also enabled this country and our Allies to have at their disposal and under their control by far the largest part of the world's supply of one of the things essential for carrying on the present struggle. The past year has served to place the industry in a still stronger position.

RUBBER GROWERS' ASSOCIATION, INC., EXTENDS ITS SPHERE OF OPERATIONS.

At an extraordinary general meeting of the Rubber Growers' Association, Inc., held in London recently, provisions were made for certain alterations in the memorandum and articles of association that will result in an important addition to the scope of the association's activity. The Malaya and Ceylon research funds—the former in existence for six, the latter for five years—have hitherto been administered by firms who guaranteed the funds. While the entire body of members profited by the research work, the onus of maintaining and directing it rested upon a comparatively small number, an association as it were, within the parent body. It was proposed to remedy this condition by amalgamating the research fund with the association, readjusting the subscriptions so that they will cover the funds. The resolutions were adopted unanimously, without discussion.

By these changes in the memorandum of association power is taken to engage in research and experimental work in connection with the cultivation and manufacture of rubber and rubber goods; to distribute among the public information as to the possible uses of rubber; to collect and circulate statistics and other information; to improve the technical knowledge of persons engaged in the industry by means of lectures, classes, examinations and scholarships; to form a museum and library, and to establish or contribute to any benevolent fund for the assistance of persons engaged in the industry.

Republic Rubber Co., Limited, has been registered with a capital of £25,000 [\$121,662] to manufacture and sell at wholesale solid and pneumatic tires of all kinds, mechanical goods, cables, etc. The capital is issued in shares of £1 [\$4.86] each. The office of the company, of which E. A. Gleich is a director, is at 5 Giltspur street, London, E. C.

Campbell, Achnach & Co., manufacturer of waterproof and india rubber goods, Glasgow, Scotland, has had plans prepared for additions made necessary by the growth of business.

The official receiver of the Margetts British Sectional Tire Co., against which a compulsory winding-up order was issued on July 13, reports total liabilities of £9,346 [\$45,482], assets nil. The company was organized to manufacture a sectional tire, for the patents, rights, etc., of which it agreed to pay £169,000 [\$822,438], and a royalty of 6 pence [12 cents] on each section or "cuff" of tire sold.

THE RUBBER SITUATION IN FRANCE.

By Our Regular Correspondent.

THE general position here remains much as it was at my last writing. Manufacturers producing tires and other rubber goods required by the army and navy continue to be very busy while other rubber mills are comparatively idle.

The evening of the day I mailed my last letter, a fire broke out in the boiler-house of the Torrilhon rubber works at Chamalières, near Clermont-Ferrand, Puy-de-Dôme, and a serious conflagration would no doubt have resulted had it not been for the promptness of the company's fire brigade.

The workmen had left the factory at 6 o'clock and only a few clerks were at work in the offices when at a quarter past seven fire was discovered in an old brick building used as the boiler room. The firemen on duty were prompt and intelligent enough to open the steam blowoff valve, thus preventing an explosion, which probably would have demolished the whole plant. The property loss resulting from the fire was large; however, it will not interfere with the operation of the plant or result in laying off any of the employees.

The Torrilhon company, or Société Anonyme des Anciens Etablissements J. B. Torrilhon, as it is registered, is one of the oldest rubber manufacturing companies in this country and has a capital of 6,000,000 francs [\$1,158,000].

MACHINERY IMPRESSMENT.

Official notices were posted recently on the walls of every town, village and hamlet throughout this country, calling for the compulsory declaration to the local authorities of all lathes, planers, drill-presses, hydraulic presses and steam hammers, with the exception of those to be found in State workshops. This declaration is incumbent on the owners, or in their absence, the landlords, guardians or other persons in charge of the buildings in which the machinery is to be found. Penalties varying from \$19 to \$400 are imposed for failure to declare or for false declaration. Obviously the object of this measure is to obtain the use of all machine tools which are standing idle or at present in use for other than military purposes. These idle tools are being requisitioned or in certain cases being put into use where they stand. The tire presses at the Continental factory near Paris have been taken over by the military authorities for the manufacture of 75 millimeter shells. It will be remembered that this factory is a branch of the Continental Caoutchouc & Gutta Percha Co., Hanover, Germany. The French factory of the British Dunlop Rubber Co., Limited, is being almost entirely used for shell making, and other tire factories possessing hydraulic presses not absolutely needed for the tire business have been turned over to the manufacture of shells.

GASOLINE SHORTAGE.

In my last letter I stated that the gasoline famine was not affecting the rubber industry here. This also applies to the use of motor vehicles generally, the supplies of gasoline are ample for military purposes and, owing to war conditions, there are very few motor vehicles in private use; so the shortage is not very severely felt except in Paris, where it has interfered with the taxicab service.

As a general rule, Paris taxi-drivers purchase their own fuel and retain a certain percentage of their receipts. In some instances the companies operating taxis are able to supply gasoline to chauffeurs at better prices than it could be obtained by them in the open market. Prior to the war the amount supplied was about 3½ gallons per day. This has been cut down to 2½ gallons, with which the chauffeurs are expected to travel 60 miles. The taxi-drivers claim that they cannot average more than 50 miles with this quantity of fuel and when they have used up their allowance of 2½ gallons they return their cabs to the garage, refusing to purchase gasoline in the open market. The result is

that taxis are very scarce after nightfall, when they are most needed by theatergoers and others. Motorbus services in Paris are now practically non-existent and this, coupled with the lack of taxis, is causing great loss to theaters and restaurants and bringing protests both from the public and from the owners of these establishments. Appeals have been made to the municipal authorities who, however, have no power to ameliorate the situation. The few refiners who monopolize the gasoline supply of France are being much criticised, as it is maintained that an abundant supply can be obtained from America and therefore there is no reason for the present shortage. The French Government has not imposed any additional taxes upon gasoline since the war started, yet prices have increased more than 35 per cent. The retail price is 2.70 francs [52 cents] per gallon outside Paris, where there are no local taxes, while the "octroi," or city tax, raises the price to 4.25 francs [82 cents] per gallon within the fortified walls of the capital.

SEQUESTRATION OF TEUTONIC FIRMS.

The Chamber of Commerce of Paris published last December the first list of German and Austro-Hungarian concerns whose property in France has been sequestered by the French authorities. The following thirteen firms engaged in the rubber and allied trades are taken from this list:

Société des Joints de Caoutchouc (rubber packing); Peter's Union (tires); Société Continentale (tires, etc.); Compagnie Continentale (tires and other rubber goods); Dusendschon et Cie (crude rubber); Bernhard Von Delden (rubber matting and linoleum); Delmenorster (linoleum); Glaser (rubber garments); Traun (rubber goods); Straus (rubber); Scherr (rubber heels); Lazlo (rubberized fabrics and linoleum); and Charles Nathan (electric wires and rubber).

SPORTING GOODS.

The practice of outdoor sports, which for a number of years has been receiving increased attention in France, is not languishing, as might be expected under war conditions. Football, tennis, hockey are still popular and tournaments are almost as frequent as in time of peace. The government encourages sports among the soldiers and every regiment of our army has several Rugby or Association football teams.

THE RUBBER SITUATION IN SWITZERLAND.

By Our Regular Correspondent.

THE position of Switzerland in the present struggle of nations is peculiar. The war has been the cause of great loss to this country; it is stated that the hotel industry alone has lost over 500,000,000 francs [\$100,000,000] since the outbreak of hostilities, while the fact that it is necessary to keep the army mobilized is a source of great expense. But these are not all our troubles. This neutral country is like a little island in the midst of the surging sea of fire and death by which it is surrounded on all sides. We have commercial treaties with all the fighting nations and do not wish to see any of these contracts broken, so our position is very difficult.

The Swiss national industries are all practically what might be termed converting industries: they are engaged in improving and increasing the value of raw materials and partly manufactured goods imported from abroad. Raw and partly manufactured materials are received from or through all the countries now engaged in a struggle for life or death, for manufacture and improvement, chiefly for re-exportation.

Practically from the beginning of the war there have been the Allies, on the one side, willing to furnish all the raw materials our industries could use and also all the manufactured goods Switzerland is accustomed to import, on condition that all these materials and goods be used at home and none exported to the central European powers. England, for instance, is willing to

furnish both crude rubber and rubber goods on condition that no rubber or rubber goods are sold to Germany and Austria-Hungary. The central European powers, for their part, offer to furnish what surplus goods and materials they can spare after their own needs are satisfied, and in exchange demand the supply of the merchandise of which they are deprived through the Allies' blockade.

The delicacy of the position in which Switzerland is placed can easily be imagined.

It is believed that the problem has been solved by the organization of an import trust known as the "Société Suisse de Surveillance Économique," or "S. S. S.," as it is briefly termed. This import trust has been chartered by the Swiss Federal Council to supervise the importation of merchandise and its distribution in the country and, under certain conditions, its re-exportation.

The "S. S. S." (Swiss Association for Economic Supervision) will attend to the importing of raw materials, partly manufactured materials and manufactured goods, for the account of third parties, and distribute these imports for use or manufacture in Switzerland, according to rules and conditions agreed upon at the time of the importation.

In deciding what quantities and kinds of merchandise should be imported, the "S. S. S." will be guided by information drawn from the statistics of Swiss imports for the years 1911, 1912 and 1913, which will be obtained from the Federal Council of our republic. In other words, the imports for 1911, 1912 and 1913 will serve as standards for determining the present needs of our country. To receive merchandise from the "S. S. S." the several trades and industries of Switzerland will have to organize responsible syndicates or associations which will have to guarantee that the merchandise furnished will be used as directed by the rules and regulations of the "S. S. S."

Raw materials imported by the "S. S. S." and goods manufactured from these raw materials will be allowed to be freely re-exported as follows:

1. To the countries from which the raw materials were obtained for importation into Switzerland, or to allies of these countries.

2. To neutral countries, as long as it is guaranteed that they will be consumed in these countries. If, however, the neutral country to which the merchandise is destined cannot be reached from Switzerland, without passing through the territory of a nation or nations at war with the country which furnished the raw materials to Switzerland, license to export will be withheld unless the latter country gives its consent to the transaction.

3. No merchandise can be re-exported to countries at war with the nation that furnished the raw materials for making it. Exceptions to this rule are merchandise in which the chief value is not the material imported. Thus, machinery and apparatus into which imported copper does not enter to the extent of more than 15 per cent of the total value, may be exported freely. Electrical machinery and apparatus can be freely exported on condition that the value of the copper it contains does not exceed 30 per cent of its total value.

Farming products that are purely Swiss and all other merchandise containing nothing but native materials can be exported freely, if not under embargo of the Swiss government.

Reports and statistics of the dealings of the "S. S. S." have to be furnished monthly to the governments agreeing to furnish merchandise through its intermediation.

The metal, textile, chemical and foodstuffs industries are already planning syndicates to avail themselves of the services of the "S. S. S."

The Swiss manufacturers were very anxious to see the "S. S. S." in general operation, for conditions were very trying, especially in the rubber trade and industry, where shortage in both crude rubber and rubber goods was creating much inconvenience. All kinds of tires were scarce and prices were rapidly

becoming prohibitive. The lack of motorcycle tires was most severely felt because motorcycles are very extensively used in Switzerland.

RUBBER FOOTWEAR.

It is winter now, the season during which quantities of rubber boots and shoes are needed in Switzerland. Russia, Germany and Austria-Hungary formerly furnished us large consignments of rubber footwear, but cannot supply them as long as this war lasts; and French and English manufacturers have all they can do to supply their own military and civil needs. We are told that America cannot deliver rubber goods to us on account of an agreement with Great Britain.

Some time ago an important rubber concern here attempted to place a big order for rubber goods in America and was informed by cable that all shipments of rubber and rubber goods from America are prohibited unless they be addressed to England, to her possessions or to her allies. This cable was given wide publicity here and was variously discussed by all our press organs. The following is a list of Swiss rubber and gutta percha manufacturers which may be of interest to your readers:

Tannerie Maennedorf, Staub & Cie., Maennedorf; solid rubber truck tires.
 Ausler & Cie., Feuerthalen; pneumatic tires.
 P. Buchet, Geneva; pneumatic tires.
 Chapins, Geneva; pneumatic tires.
 Charles Faure, Geneva; pneumatic tires.
 Albert Muffert, Geneva; pneumatic tires.
 Dubied & Cie., Convét; tire studs and rivets.
 Aubert, Crenier & Cie., Islettaz; electrical cables.
 Suhner & Cie., Herisau; electrical cables.
 Züricher, Draht & Kabelwerke, Zurich; electrical cables.
 H. Weidmann, Rapperswill; rubber insulators.

A NEW WATERPROOF CLOTHING FACTORY IN AMSTERDAM.

At Amsterdam, Holland, a factory is being erected for the firm of L. A. & F. L. Kattenburg, manufacturers of waterproof garments and wholesale clothiers of that city, Rotterdam, and Manchester, England. The foundation stone of the new factory was laid on December 1, 1915, by Alfred Kattenburg, Jr. The building will be 270 feet in length, with three stories and basement. It will furnish room for 800 to 900 operatives, and the site allows space for doubling the size of the building. In addition to up-to-date show rooms, offices, etc., the provisions made for the comfort and health of the employees are of the most modern character, including commodious dining rooms, well-equipped kitchens, dressing rooms, etc. The establishment is one of the most important in the Netherlands engaged in the manufacture of rubber garments and raincoats.

SWEDEN PROHIBITS RUBBER EXPORTS.

Sweden has prohibited the export of the following articles: Manufactures of soft rubber, excepting belting and boots and shoes; manufactures of hard rubber, ebonite, etc., or combinations with other materials; rubber toys and parts of toys; rubber in solution or in paste form (but not rolled into sheets or further manufactured), with or without compounding ingredients; also artificial soft rubber.

Following upon this action, the temporary suspension by the Rubber and Tin Exports Committee of the issue of licenses for shipment of rubber goods to Sweden has been, to a certain extent, removed. The India Rubber Manufacturers' Association has been informed that the Exports Committee cannot undertake to discuss the conditions under which applications for licenses will be dealt with, but they will consider any individual application on its merits.

LARGE TIRE ORDER PLACED IN JAPAN.

According to a clipping from a Yokohama, Japan, newspaper, orders aggregating 1,000,000 automobile and bicycle tires have recently been placed in Japan.

The Rubber Trade in Germany.

By Our Regular Correspondent.

THE only article in which original qualities are jealously maintained—the rubber tire—has been placed under strict embargo, as far as domestic trade is concerned. Every owner of rubber tires was ordered, as a preliminary step, to register them. The next step was their inspection by government officials and, if found suitable for military use, they were “commandeered,” at a government appraisalment, by the Power Wagon Department of the German Army. To prevent any tires slipping through its fingers, the government issued a decree prohibiting the sale of rubber tires of any description without the consent of the military authorities. Add to this the requisitioning of all motor vehicles that could be used by the army, and the position of the tire industry in Germany may easily be understood.

A “war meeting” of tire manufacturers was recently held in Berlin to discuss means for the relief of the tire scarcity and the advisability of establishing a central office, through which manufacturers could conduct all their purchases of crude rubber and thus prevent “corners” and speculation.

Tire and automobile manufacturers recently addressed a memorial to the war minister, calling his attention to the fact that while the casings made in German factories answered all requirements, the quality of the inner tubes was unsatisfactory, it being impossible, from the material at their command, to make good tubes. It was suggested that, at regular intervals, stipulated quantities of crude rubber of suitable quality be released to inner tube manufacturers, to enable them to maintain the average of quality.

Before the war broke out competition between German and foreign tire manufacturers in Germany was so bitter that prices were cut and overhead expenses increased to the extent that no reasonable margin for profit was left. The initial cause of the trouble appears to have been the opening by tire manufacturers of too many branches. As soon as a company opened a branch office with stock in a new place

smiths and retail dealers in cigars and cigarettes, not to mention the tremendous number of cycle dealers who handled automobile tires. The principal object of all these dealers was to make a showing. The sale of automobile tires



WOMEN TESTING INNER TUBES.

was merely incidental to their business and they were satisfied with extremely small profit, but the legitimate trade suffered. Prices were cut and under-cut, many people selling tires only for “beer money”. In many instances tires worth \$40 were sold with from 50 cents to a dollar profit.

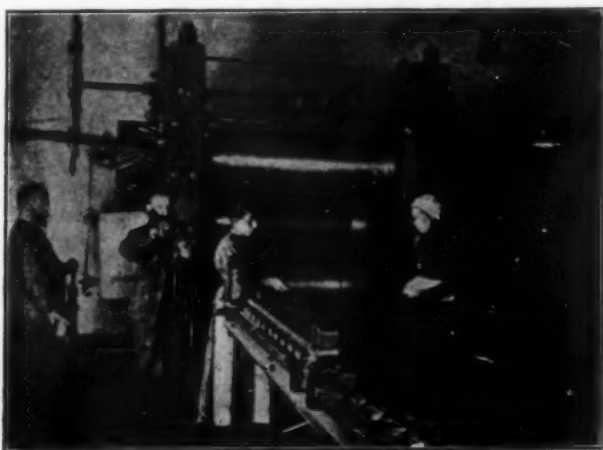
Tire manufacturers, at first, thought that the small dealer was of little importance to them, that people had to have tires and would buy them and that the dealer would have to sell even if he made no profit. They soon found out, however, that the price-cutting was as detrimental to their interests as it was to those of the dealer. The automobile tire trade was profitable to no one, not even to the consumer, who was at a loss to know what tire to buy and often bought the wrong one.

A movement is now under way in Germany to remedy this evil, and it is expected that dealers and manufacturers will coöperate in placing the automobile tire business on a solid commercial basis. German tire interests are also advocating the boycott of all foreign-made tires and an endeavor will be made to prevent dealers selling foreign-made tires, even if the tires are profitable to them. Attempts are being made to place all the former troubles of the trade at the door of foreign manufacturers, whether maintaining factories in Germany or not.

SOLID RUBBER TIRES.

The increasing demand of our army trucks for solid rubber tires led many of our manufacturers to take up this line, with which, in many cases, they were not at all familiar. Many costly mistakes were made in this way, the most common being the selection of compounds on the sole merit of their cheapness. Mileage guarantees were handed out indiscriminately, with the result that many have spent fortunes to learn that a rubber compound can never be too good for a solid rubber motor truck tire.

Our tire manufacturers are all very busy and expect exceptionally good business to follow the war. Horses will be scarce, and it is very likely that the use of motor vehicles will be further extended by the low prices at which used, but still serviceable machines will be sold by the army. Special companies have already been formed for rebuilding war automobiles. Automobiles require tires, and our manufacturers are going to see that foreign competition does not get the business. The lack of crude rubber will inconvenience our tire manufacturers for some time after the close of hostilities, but other branches of trade and



WOMEN RUBBER WORKERS—CALENDERING.

another company would do the same thing, with the result that one factory after another was obliged to support an ever-increasing number of branches and small stores, the turnover of which was very often too small to pay expenses.

In small places, where regular tire or automobile dealers did not exist, and even in places maintaining garages, stocks of tires were turned over to grocers, bakers, butchers, black-

industry will also be slow in getting under way and our manufacturers are organized and will see that the government protects their interests. Tire manufacturers and dealers here are continuing their efforts to obtain the unification and the reduction of the numbers of tire sizes.

RUBBER CLOTHING.

Manufacturers of rubber clothing are also feeling the pinch of war times, and recently a deputation from the industry sought an interview with the head of the War Materials Bureau, Berlin, to request the release of enough crude rubber to enable them to carry on their business. He replied that he would deal only with a central organization of the industry, and the manufacturers thereupon took steps to form such an organization, with a central bureau and distributing depot in Berlin. The members are pledged to obtain their supply of rubber solution from this depot, the distribution being based on the number of seamstresses employed. A kilogram of rubber, or its equivalent in rubber cement, for each 50 garment cementers, is apportioned, and for this the manufacturer must pay cost, plus 7 per cent.

ARTIFICIAL LIMBS.

Many skilled workmen have lost a limb or limbs in the war, and our Association of German Engineers, realizing that these crippled workmen could still be made useful citizens, has offered a first prize of 10,000 marks [\$2,380] and a number of lesser prizes for improved artificial hands, arms and legs, that will enable maimed soldiers to be useful in the mechanical industries. The prizes will be awarded on February 1, 1916, by a jury composed of representative members of the technical, manufacturing, medical and orthopedic professions.

EMBARGO.

Our export embargo has been extended to cover all so-called rubberized materials, garments and the like, whether coated, impregnated or inlaid with rubber, or made up with rubber threads.

The controversy in regard to the placing of cotton on the contraband list by the Allies will be to some extent simplified by the action of the German Government in placing an embargo on all exports of raw or ginned, or otherwise manufactured cotton, yarns of cotton, with or without mixtures of vegetable or animal fibers (excepting silk and cotton thread and sewing thread), and coverings for hose, of woven cotton or flax.

In regard to the scarcity of rubber, I note in a recent issue of THE INDIA RUBBER WORLD, the French claim that E. Ronxeville's reclaiming process is the secret of our being able to continue to use rubber tires, in spite of the fact that we have been cut off from sources of crude rubber supply for more than 12 months. This is an error. We have just as good, perhaps better, reclaiming processes than the Ronxeville method, and we are clever enough to obtain some crude rubber from time to time. We admit that we are suffering from a scarcity of crude rubber that obliges us to collect waste rubber in every form, for reclaiming. The use of automobiles is now limited to the army and to physicians for use in attending to their increased practice, caused by the absence of many medical men called to the military service. But these are only precautionary measures, and the rubber question alone will not end the war. Our official and semi-official organizations for purchasing, collecting and conserving raw materials are doing wonders in distributing them judiciously and supplying any pressing needs which become manifest. As an example of the care these organizations take in the exercise of their duties: jute sacks, formerly used for shipping sugar, salt, cement, hops, etc., are no longer permitted to be used for such purposes, on account of the scarcity of jute. Barrels, cellulose sacks and metal containers are used instead.

"WAR QUALITY" RUBBER GOODS.

On the principle that "necessity knows no law," manufacturers and dealers handle and consumers use substitutes for raw ma-

terials and the finished product, without question. The food, clothing and other commodities we thus accept as an unavoidable result of the war would, in time of peace, be made of better and even altogether different materials.

Substitutes are used extensively in the rubber manufacturing industry, and rubber manufacturers, lacking a sufficient supply of raw material, are turning out war hose, war transmission and conveyer belts, war rubber garments, etc., etc. While not by any means as good as the regular lines, these "war qualities," as they are termed, answer their purpose and relieve us from absolute want.

An exhibition of substitutes was recently opened by the "Housewives' Association of Greater Berlin" to reassure the public by showing how completely the lines made from unavailable imported materials have been covered by resourceful manufacturers. There were substitute food supplies, raiment and other articles of everyday use, including, of course, substitute rubber articles in great variety, from garden hose to nipples for nursing bottles, squeegees, rubber sponges, etc.

TAXATION OF WAR PROFITS.

A topic much discussed here is the proposed special taxation of all profits made on contracts for supplies to the army and navy. The levying of such special taxes would be an injustice to manufacturers who have reorganized their plants and equipped them with special machinery for serving our defenders. No system of taxation could take account of the cost of these transformations, nor could it allow for what it will cost these manufacturers to return to their peaceful pursuits when the war is over.

AUSTRIA-HUNGARY.

We learn from Austria that the government has taken possession of all rubber tires, regardless of size, quality or condition. It is presumed that partly worn tires will be repaired and used for military purposes, while those past repairs and unsuited for army use will be reclaimed and re-manufactured for the government.

TRADE NOTES.

A recent meeting of the Vereinigte Gummiwaren-Fabriken Harburg-Wien, held in Hamburg, was attended by 18 shareholders, representing 1,968,900 marks [\$468,598] capital and 6,563 votes. An 18 per cent dividend was declared.

SCANDINAVIAN NOTES.

NORWAY, like some other neutral European countries, has been suffering from the effects of the British embargo on rubber and rubber manufactures. The automobile tire famine prevailing in Norway was mentioned in a recent issue of THE INDIA RUBBER WORLD. The situation has now been relieved, thanks to the joint efforts of the Association of Norwegian Automobile Tire Importers and the Royal Norwegian Automobile Club, who sent a delegate to London recently and obtained permission to import 9,000 automobile tires per annum into Norway.

The United Rubber & Air Ring Co., of Copenhagen, Denmark, recently acquired the rubber plantations of the Copenhagen East Asiatic Rubber Plantation Co., which are located near Utaah, in Johore, Malaya. These plantations produce sufficient quantities of crude rubber to supply all the demands of the United Rubber company's plant.

From Kjøge, Denmark, a correspondent writes that they are manufacturers of reclaimed rubber, but an embargo has been placed on the exportation of their products, except to neutral countries, nor can they purchase sufficient rubber waste to carry on their business, owing to the exportation of this material being prohibited by the warring nations; so they are making tires.

CEYLON AND MALAYA CROP PERCENTAGES AND RAINFALL.

THE Rubber Growers' Association, London, England, has issued two comprehensive charts and statements showing the percentages of crop harvested, and of rainfall recorded monthly by representative estates in Ceylon and Malaya. The figures are computed on annual crops of from 17 to 20 million pounds of Malaya rubber, and from five to seven million pounds of Ceylon rubber.

It appears from these charts that the wintering period, which occurs in February and March, coincident with the lowest rainfall, has a much greater effect on the crop of rubber in Ceylon than in Malaya; but the figures are no doubt

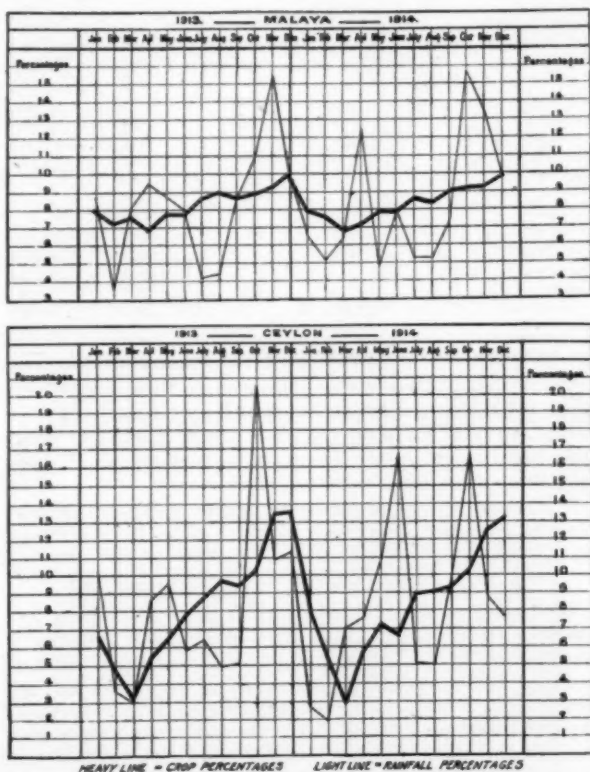


CHART SHOWING THE PERCENTAGE OF CROP HARVESTED, AND OF RAINFALL RECORDED MONTHLY IN 1913 AND 1914 BY REPRESENTATIVE ESTATES IN MALAYA AND CEYLON.

affected by the practice on some Ceylon estates of ceasing or reducing tapping operations during the wintering season. The variation in the daily distribution of rainfall in the respective countries and in the different districts must also be taken into account.

The heaviest yielding month in Ceylon produced more than four times the quantity of rubber harvested in the poorest month (13.30 per cent in December, 2.91 per cent in March, 1914) and the crop of the Ceylon estates for the first six months of 1914 was only 36.26 per cent of the total. In Malaya the fluctuations between highest and lowest yielding months are much less pronounced (9.94 per cent in December, 6.87 per cent in March, 1914), while in the first six months of 1914 the Malaya estates harvested 45.49 per cent of the total crop.

It would also appear that machinery and drying space required should be less in Malaya, where monthly outputs do

not show any extreme fluctuation, than in Ceylon, where as much as one-seventh of the year's crop is harvested in a single month.

The charts show that there is no great variation in crop percentages between 1913 and 1914 in either country.

COAGULATION OF LATEX.

A WRITER (L. E. C.) in the "Tropical Agriculturist" (October, 1915) submits some remarks on rubber latex coagulation. There seem to be several well-defined stages in the degree of coherence of rubber separated from latex. These are creaming, flocculence, agglutination and coagulation.

Creaming is the condition observed in the early stages of slow coagulation when the latex thickens.

Flocculence refers to the formation of small particles of rubber without coalescence into lumps. This state is observable in latex to which much formalin has been added.

Agglutination applies to local or lumpy coagulation observed when latex coagulates spontaneously, or when certain mineral salts are added.

Coagulation proper is the final stage observed on careful addition of acids to latex, the rubber forming in one clot and leaving a clear liquid.

In rubber latex there is a suspension of rubber particles which subsequently form rubber; also at the same time there is present, in solution, a number of bodies which are of the protein class. These proteins are in colloidal solution and are capable of being precipitated by certain reagents, notably acids. It seems probable that this protein acts as a protective colloid to the pure caoutchouc present. The theory of this protective action is that a combined solution and suspension, such as this, acquires many of the characteristics of the substance in colloidal solution. It has been suggested that this protective action is due to the absorption of a layer of the dissolved protective agent over the surface of each of the suspended particles. It seems probable that this is so in the case of the rubber particles, in view of the fact that it does not behave as a pure suspension, but that its coagulation reactions resemble in many respects those of certain proteins. Not all the nitrogenous constituents of latex, however, are precipitated with the rubber during the ordinary process of coagulation.

The effects of anti-coagulants involve the action of many factors. The anti-coagulant may be an alkaline substance acting to neutralize acid formed in the latex by decomposition or fermentation, or as a retarding agent on the coagulating enzyme said to exist in the latex. When formalin has been added to latex in certain proportions it apparently acts as a retarding agent, since the latex will retain its milky appearance and the rubber does not form a clot; but, actually, the latex loses its original nature and consists of a number of particles of rubber in suspension in a clear liquid. In this connection it may be noted that formalin is a coagulant of certain protein bodies.

In the coagulation of rubber latex by the Brazilian and other processes of smoking, the effect of heat enters very largely into the operations. In the Wickham process the author finds that, if the temperature of the jet of smoke impinging on the layer of latex be less than 140 degrees F., coagulation is not obtained. Heat alone, at this and slightly higher temperatures, will coagulate fresh latex. Latex heated to 140 degrees F. will coagulate with a certain quantity of acid almost immediately, whereas normally it would have required some hours.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

Rubber Planting Notes.

CEYLON FORWARD CONTRACTS FOR 1916 EXEMPT FROM TAX.

THE decision of the British Colonial authorities to place a duty of 10 shillings (\$2.42) per 100 pounds, or about 2.5 cents a pound, on all Ceylon rubber exports, was reported and commented upon editorially in the November issue of THE INDIA RUBBER WORLD.

Recent information shows that this decision has caused much unrest among the rubber buyers of Colombo, many of whom, as commission agents acting for principals in other countries, had contracted for future delivery of rubber still to be gathered and delivered month by month. The government's intention was to tax the producer, but the absence of any clause in the contracts for future delivery, relating to duty payments, caused the liability to fall on the buyer.

Meetings of buyers were held and much correspondence was exchanged between the Ceylon Chamber of Commerce and the Colonial Government with the result that the latter has consented to exempt, for a period not to extend beyond December 31, 1916, payment of the new tax on all rubber still to be delivered to shippers month by month under formal contracts entered into before October 1, 1915.

CRUDE RUBBER EXPORTS FROM SUMATRA.

The latest report published by the Chamber of Commerce of Medan, Sumatra, covers the first six months of 1915, and from it we have compiled the following table, showing the destination and quantities of crude rubber exported from Sumatra during this period:

To—	pounds
London	4,918,232
United States	1,281,027
Netherlands	749,773
Singapore	292,081
Penang	207,429
Java	44,801
Other destinations	339,876
Total	7,833,219

A DISEASE OF MALAYA PLANTATION RUBBER.

A fungoid disease of plantation rubber in Malaya is the subject of Bulletin No. 22, of the Federated Malay States Department of Agriculture, by Mr. F. T. Brooks, M.A., who states:

This disease is caused by a fungus known as *Ustilina zonata* and is easily distinguished from root diseases caused by *Fomes semitostus*, *Sphaerostilbe repens* and *Hymenochaete noxia*. Its fructifications present themselves in the shape of greyish and blackish plates on the collar and on exposed lateral roots mostly of old rubber trees, though five-year-old trees are also attacked. It is believed that the fungus begins to grow on rotten roots, but in some cases it has been observed to follow attacks of white ants. The development of the disease can often be arrested by cutting off and destroying all discolored tissues when the fungus is in its early stages.

A rubber "goldbrick" is reported as offered for sale in the Far East, where the government of the Federated Malay States has issued a warning to "get-rich-quick" investors against the purchase, from designing individuals, of seeds of the "paint tree," said to yield a latex from which rubber-paint can be made. The seeds are those of a *Manihot*, the cultivation of which proved a failure in Malaya.

The Imperial Ethiopian Rubber Co., Limited, an English corporation that received from the Emperor Menelik of Abyssinia an exclusive concession for the collection and exportation of rubber, covering the whole of his empire, has been placed in liquidation. The monopoly was withdrawn in 1908.

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

MALAY PRODUCTION COSTS.

The following list, taken from "Grenier's Rubber News," Kuala Lumpur, shows the progress made by 20 leading companies in reducing the cost of producing plantation rubber during the past three years:

Plantations.	Cost Per Pound in United States Currency.		
	1912.	1913.	1914.
Batu Caves	36.6	25.5	18.6
Kapar Para	36.1	29.8	19.8
Pataling	33.0	26.2	19.8
Selangor	34.0	27.7	20.1
Kuala Selangor	39.7	31.1	20.3
Straits Rubber	38.0	26.8	20.5
Sungei Kapar	35.9	27.1	20.8
Harpenden	36.6	30.7	21.8
Highlands	39.0	28.4	22.2
Seafeld	42.5	32.8	23.3
Nordana	37.5	32.1	23.3
Klanang	39.2	26.2	23.6
Kepong	48.4	33.3	24.1
Scottish Malay	43.3	26.9	24.1
Lanadron	47.6	38.9	24.3
Ledbury	40.6	30.5	24.3
Damansara	37.4	30.4	24.7
Gula-Kalumpang	50.5	36.5	24.9
Golconda	43.0	30.4	24.9
Anglo-Malay	41.1	30.3	25.3
Average cost	35.0	30.5	23.9

THE RUBBER PLANTATION INDUSTRY IN THE STRAITS SETTLEMENTS.

The total area under rubber cultivation in Malacca is 117,200 acres, and evidence of the steadiness and good future of the industry is shown in recent reports from the Far East, which state that various rubber estates throughout the country are opening up fresh areas to rubber plantations.

It has long been a practice in the Straits Settlements' plantations to interplant rubber with tapioca. Now, however, these catch crops under rubber are being abandoned.

VIEWS OF R. DERRY ON *HEVEA* PLANTING.

In a paper on the "Life of a Rubber Estate," R. Derry, ex-officer of the Federated Malay States Agricultural Department, sets forth in detail a plan to utilize the advantages of different methods in *Hevea* planting. In part, Mr. Derry states that the primary tree is the best form to cultivate but that in close planting this advantage is lost, owing to the fact that in the struggle for light the strong branches do not develop. The "pollard" tree is a fast grower and bears early, but is the first exploited. Early tapping is necessary, but injurious to subsequent growth, leading to early exhaustion of the estate. Mr. Derry advises planting one set of permanent, primary trees wide apart and leaving them untapped; at the same time inter-planting another set of subsidiary, pollard trees, to be kept pruned and brought into bearing early. The primary trees should be left untapped for the term of the subsidiary crop—10 to 11 years after transplanting.

PRUNING RUBBER TREES ON PLANTATIONS.

Writing on the subject of wholesale pruning of rubber trees, as practiced on Malayan plantations, an expert correspondent of our Far Eastern contemporary, the "Malay Mail," is of the opinion that it is not good practice unless carried out with sufficient discrimination. On many plantations the lower branches of trees are removed, not only from closely planted trees where the branches have met, but also on open plantations where the trees have not yet completely shaded the ground. Indiscriminate pruners are guided more by routine than by the theory that the lower branches which they destroy prevent light and air reaching the tree stems, thus retarding the growth of the plants. In closely planted areas the additional shade provided by lower branches may preserve humidity and thus retard bark renewal

on tapped areas and increase the risk of fungoid diseases. But, generally speaking, indiscriminate pruning is more likely to retard than to hasten bark renewal because the bark is formed from within the tree, not from without. The leaves create the substances the tree uses for repairing its bark wounds and, therefore, to lessen the number of leaves, which is often the clearest result of pruning, is to decrease the tree's output of bark-renewing substances. Branches that are useless will, as a rule, be shed spontaneously by the tree. Reasons for pruning may be sound in the particular case of an individual tree, but they do not justify the indiscriminate sacrifice of branches as practiced generally on the Malayan plantations.

CHICLE DISPLACING RUBBER IN VENEZUELA.

The British consul at Ciudad Bolivar reports that the balata industry of Venezuela reached its high-water mark in 1913, and quotes the following export statistics as proof of the beginning of a decline in the industry:

	1913.		1914.	
	Pounds.	Value.	Pounds.	Value.
Balata	4,851,104	\$2,018,079	1,511,944	\$557,603
Rubber	443,004	750,326	339,416	152,073

In comparison with this decline, which the consul attributes to the decreasing profitableness of rubber gathering and the development of other fields of employment for labor, the production and export of chicle, which is sold to the United States for the manufacture of chewing gum, has increased almost five times.

HEVEA AND HURRICANES IN JAMAICA.

WERE it not for hurricanes, Jamaica would show up well for *Hevea* culture. There are but few plots of rubber—100 trees here, 60 there, and so on. The product is good and



Hevea, 7½ YEARS OLD, JAMAICA.

abundant. In the tapped tree shown, a tree 7½ years old, one pound of first-grade rubber was secured in three months, tap-

ping every other day. But the plantation upon which this grew lost 50 per cent of its trees in a recent hurricane. The twisted



Hevea TREE DESTROYED BY A HURRICANE, JAMAICA.

stump of the *Hevea* here shown is eloquent evidence of force of the wind. In a few of the near-by islands protected from wind, and in Central America and the Guianas, for example, *Hevea* does as well, perhaps better, than in a great many places where it is now grown on a large scale.

BALATA EXPORTS FROM FRENCH GUIANA.

Statistics for the fiscal year 1914-15 show that the total exports of crude balata from French Guiana during this period amounted to 52,274.50 kilograms (115,004 pounds), as compared with 41,694.50 kilograms (91,728 pounds) exported during the preceding fiscal year.

BALATA EXPORTS FROM DUTCH GUIANA.

Exports of balata from Dutch Guiana, from January to September, 1915, amounted to 120,050 kilograms (264,110 pounds), as compared with 639,469 kilograms (1,406,832 pounds) exported during the corresponding period of 1914.

CRUDE RUBBER INDUSTRY IN LIBERIA.

Frequent mention has been made in THE INDIA RUBBER WORLD of the crude rubber industry in Liberia. Recent reports from the African republic state that the exports of crude rubber, though comparatively small, are steadily increasing, thanks to the organized methods of the British association in which is vested the supervision of the rubber royalties throughout the republic. A subsidiary of this association now has a plantation of about 1,100 acres containing 135,000 *Hevea* trees, the majority of which are producing; and the entire plantation will have reached maturity by the tapping season of 1916. This plantation was started about six years ago, on strictly modern lines, from seed received from the Botanic Gardens of Ceylon, and has constantly been under expert supervision. All of Liberia's rubber goes to Great Britain.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED NOVEMBER 16, 1915.

- N** O. 1,160,159. Skating overshoe. L. Freeman, Montreal, Quebec, Canada.
- 1,160,168. Valve connection for pneumatic tire tubes. A. E. Henderson, Toronto, Ontario, assignor to Superior Tubes & Accessories, Limited—both in Canada.
- 1,160,206. Tread surface for footwear. R. Smith, Sherbrooke, Quebec, Canada.
- 1,160,214. Sanitary device. B. G. Thereses, Chicago, Ill.
- 1,160,220. Demountable rim tool. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York.
- 1,160,221. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York.
- 1,160,222. Vehicle wheel and rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York.
- 1,160,223. Vehicle wheel. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York.
- 1,160,224. Vehicle wheel. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York.
- 1,160,225. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York.
- 1,160,226. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York.
- 1,160,252. Life preserver. W. G. Brokaw, High Point, N. C.
- 1,160,253. Life preserver. W. G. Brokaw, High Point, N. C.
- 1,160,254. Tire supporting rim. R. S. Bryant, assignor to The Standard Welding Co.—both of Cleveland, Ohio.
- 1,160,272. Tire filler core. L. J. Frederickson, Kansas City, Mo.
- 1,160,310. Pneumatic tire. J. W. Moakler, assignor of one-half to N. S. Wright—both of East Worcester, N. Y.
- 1,160,323. Vehicle wheel tire. J. I. Richards, San Francisco, Cal.
- 1,160,334. Intermediate shield for pneumatic tires. J. B. Smiley, South Omaha, Neb.
- 1,160,424. Pneumatic tire. C. E. McClay, Los Angeles, Cal.
- 1,160,491. Storage battery. P. Brown, Springfield, Mass.
- 1,160,508. Vehicle tire. L. Hay, Pittsburg, Pa.
- 1,160,551. Bottle washer brush. C. K. Volckening, New York.
- 1,160,576. Flexible non-skid device for dual tired wheels. M. H. Cleaver, assignor to Neverskid Manufacturing Co., Inc.—both of New York.
- 1,160,577. Combined non-skid and traction device for dual tired wheels. M. H. Cleaver, assignor to Neverskid Manufacturing Co., Inc.—both of New York.
- 1,160,631. Pneumatic shoe tree. E. H. Magnus, Toledo, Ohio.
- 1,160,712. Inflation valve for pneumatic tires. A. E. Henderson, Toronto, Ontario, assignor to Superior Tubes & Accessories, Limited—both of Canada.
- 1,160,797. Nasal inhaler. K. F. Wallin, New York.
- 1,160,873. Canvas shoe. S. Frankenburg and F. H. Betteridge—both of Salford, England.
- 1,160,944. Hose coupling. F. X. Müller, assignor to Republic Hose Coupler Corporation—both of Buffalo, N. Y.
- 1,160,953. Pessary. A. M. Palmer, Los Angeles, Cal.
- 1,160,977. Demountable rim for automobile wheels. W. E. Copithorn, Natick, Mass.

ISSUED NOVEMBER 23, 1915.

- 1,161,061. Eye shield. R. Malcolm, Chicago, Ill.
- 1,161,102. Pneumatic shock absorber. W. G. Wood, Sacramento, Cal.
- 1,161,103. Truss. C. G. Woods, assignor of one-half to J. F. Leashey—both of St. Louis, Mo.
- 1,161,107. Hose supporter. R. V. Blake, Yonkers, N. Y.
- 1,161,123. Fountain pen. J. Gilbert, Victoria, British Columbia, Canada.
- 1,161,247. Resilient tire. E. W. Price, Toronto, Ontario, Canada.
- 1,161,250. Eraser brush. F. D. Roberts, Montclair, assignor to Weldon Roberts Rubber Co., Newark—both in New Jersey.
- 1,161,261. Catheter apparatus. J. F. Spaulding, Kansas City, Mo.
- 1,161,348. Wheel rim. M. J. Selzer, Akron, Ohio.
- 1,161,507. Armored pneumatic tire. C. Moss, New York.
- 1,161,549. Tire tread. T. D. Tiefenbacher, New York.
- 1,161,578. Dust cap for tire valves. E. A. Alexander, assignor to C. A. Herlie—both of Rochester, N. Y.

- 1,161,641. Air hose coupling. W. Engle, Taylor, Wash.
- 1,161,645. Tire protector for motor vehicles. G. A. Faber, Baltimore, Md.
- 1,161,654. Rubber fly swatter. G. W. Gomer, Conyngham, assignor to Standard Vending Machine Co., Hazleton—both in Pennsylvania.
- 1,161,698. Separable rim. P. S. Larson, assignor of one-half to J. B. Dow—both of Beloit, Wis.
- 1,161,719. Massage glove. W. R. Norton, Hightstown, N. J.
- 1,161,720. Waterproof boot or shoe. C. A. Paige, Norwood, assignor to C. S. Bird, Walpole—both in Massachusetts.
- 1,161,725. Vaccine container comprising a rubber bulb. P. S. Pittenger, assignor to H. K. Mulford Co.—both of Philadelphia, Pa.
- 1,161,728. Safety cap for tire valves. E. A. Rasbridge, Scranton, Pa.

ISSUED NOVEMBER 30, 1915.

- 1,161,836. Fountain syringe. G. W. Brown, Maynard, Mass.
- 1,161,879. Heel construction for rubber footwear. F. E. Payne, assignor to Goodyear Rubber Co.—both of Middletown, Conn.
- 1,162,004. Resilient wheel with rubber blocks. S. S. Wells, Short Hills, N. J.
- 1,162,005. Resilient wheel. S. S. Wells, Short Hills, N. J.
- 1,162,078. Resilient wheel with cushioned spokes. W. W. Krutsch, assignor of one-half to C. A. Walker—both of Coffeyville, Kans.
- 1,162,079. Vehicle wheel. W. W. Krutsch, assignor of one-half to C. A. Walker—both of Coffeyville, Kans.
- 1,162,080. Vehicle wheel. W. W. Krutsch, assignor of one-half to C. A. Walker—both of Coffeyville, Kans.
- 1,162,081. Rubber padded garment supporter loop. C. P. Kuehn, assignor to A. Stein & Co.—both of Chicago, Ill.
- 1,162,087. Life preserver. J. E. Lomas, Smuggler, Colo.
- 1,162,099. Tire valve cap. M. F. Patton, Tuscaloosa, Ala.
- 1,162,143. Wheel tire. J. L. Donat, Chicago, Ill.
- 1,162,158. Solid rubber tire. E. A. Haaker, Englewood Cliffs, N. J.
- 1,162,188. Tire with elastic ribs and plugs. P. W. Pratt, Boston, Mass.
- 1,162,216. Detachable flange for pneumatic tire rims. W. N. Booth, assignor to The Booth Demountable Rim Co.—both of Cleveland, Ohio.
- 1,162,217. Detachable tire holding ring. W. N. Booth, assignor to The Booth Demountable Rim Co.—both of Cleveland, Ohio.
- 1,162,254. Rim for vehicle tires. J. G. Rolf, Covington, Ky.
- 1,162,260. Elastic waist closure. J. Sklar, Philadelphia, Pa.
- 1,162,321. Pneumatic tire. W. E. Travers, assignor of one-half to E. E. Trefethen—both of Oakland, Cal.
- 1,162,379. Demountable rim for solid tires. T. Midgley, assignor to Morgan & Wright—both of Detroit, Mich.
- 1,162,445. Composite sole with a rubber tread. W. F. Bostock, Providence, R. I., assignor to Williams-Kneeland Co., Boston, Mass.
- 1,162,470. Tire rim contractor. A. A. Frieledt, Chicago, Ill.
- 1,162,525. Suit for divers. H. Stelzner, assignor to the Firm of Drägerwerke, Heintz & Bernh. Dräger—both in Lübeck, Germany.
- 1,162,557. Fountain pen. C. F. Billau, Cedar Rapids, Iowa.
- 1,162,563. Demountable rim. R. S. Bryant, assignor to The Standard Welding Co.—both of Cleveland, Ohio.
- 1,162,568. Uterine supporter. D. G. Carey, Elmira, N. Y.
- 1,162,610. Life saving belt. A. Jacobson and H. Rubin—both of New York.
- 1,162,668. Safety valve and tire signal. H. E. Van Ness, Elmira, N. Y.
- 1,162,671. Pneumatic tire. I. J. Webster, Haverhill, Mass.
- 1,162,709. Cushion heel. A. K. Pomeroy, Williamstown, N. J.

Re-issue.

- 14,024. Water bag. R. B. Whitmarsh, Los Angeles, Cal.

ISSUED DECEMBER 7, 1915.

- 1,162,744. Valve for pneumatic tires. J. W. Blodgett, Chicago, Ill.
- 1,162,749. Pneumatic tire. W. H. Burritt, assignor to J. T. Burritt—both of St. Louis, Mo.
- 1,162,758. Air conveying device in a pneumatic tired wheel. W. S. Eastle, New York, N. Y.
- 1,162,786. Rubber stamp for printing characters of multiple colors. W. Kieck, Albuquerque, N. Mex.
- 1,162,852. Flexible ball tank valve of rubber. W. J. Eggers, New York, N. Y.
- 1,162,875. Valve for pneumatic tires. M. J. Payne, Staunton, Va.
- 1,162,900. Vehicle tire. B. H. Brown, Manon, Ind.
- 1,162,909. Life preserver. E. Goldbach, Winfield, N. Y.
- 1,162,979. Demountable tire. J. H. Coffey, Jr., and J. H. Coffey, assignors of one-half to Gutta Percha & Rubber, Limited—all of Toronto, Ontario, Canada.
- 1,163,000. Vehicle tire. C. F. Forster, Oak Park, Ill.
- 1,163,001. Belt cleaner comprising a block of rubber. R. S. Gibson, Lockhart, S. C.
- 1,163,055. Collapsible demountable tire rim. H. Wirz, Los Angeles, Cal.
- 1,163,151. Tire holding rim for wheels. H. L. Hosterman, Parkersburg, W. Va.
- 1,163,195. Spring wheel with rubber tread. P. A. Angeleski, Lilly, Pa.

[Chemical Patents will be found on page 169; Machinery and Process Patents on page 179.]

- 1,163,219. Means for inflating pneumatic tires. F. J. Cleaver, Carnegie borough, Pa., assignor of one-fourth to S. L. H. Morris; one-fourth to H. W. Hodgdon, and one-fourth to E. T. Baron, Pittsburgh, Pa.
- 1,163,257. Collapsible tire rim. A. L. Ottenad, St. Louis, Mo.
- 1,163,258. Vehicle wheel with rubber tread. W. H. Parkham, Knoxville, Tenn.
- 1,163,311. Non-skid tire. P. Bernstein, Roxbury, Mass.
- 1,163,319. Fountain tooth brush. W. O. Campbell, St. Louis, Mo.
- 1,163,338. Pneumatic tire. W. D. Harris, assignor to Harris Tire & Rubber Co.—both of Philadelphia, Pa.
- 1,163,343. Rubber coated hair curler. N. Illoway, New York, N. Y.
- 1,163,368. Doll having an inflatable air receiving element within head. S. H. Rosfsky, Port Richmond, N. Y., assignor of one-half to A. Cone, Toronto, Canada.
- 1,163,395. Arch support. E. P. Cushman, Methuen, Mass.
- 1,163,408. Tire armor. S. Hunter, Syracuse, N. Y.
- 1,163,456. Operating device for split wheel rims. D. J. Raymond, Cranston, Wis.
- 1,163,478. Door stop. J. H. Snow, Indianapolis, Ind., assignor to A. Y. Wright, Douglas, Ariz.
- 1,163,490. Toe separator. A. Weil, New York, N. Y.
- 1,163,518. Tire armor. E. Farr, Lancaster, Ohio.
- 1,163,567. Needle for talking machines having rubber vulcanized to its shank. L. K. Scottford, Chicago, Ill.
- 1,163,577. Rim for vehicle wheels. P. S. Whiting, Akron, Ohio, assignor to M. E. Whiting, Wayne county, Mich.
- 1,163,619. Chain tire grip. W. B. Lashar, assignor to American Chain Co., Inc.—both of Bridgeport, Conn.
- 1,163,620. Tire grip. W. B. Lashar, assignor to American Chain Co., Inc.—both of Bridgeport, Conn.

UNITED KINGDOM.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent upon the filing of the application.

*Denotes Patents for American Inventions.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 10, 1915.]
16,291 (1914). Size adjusting rubber hat band. W. L. Jordan, 66 Bassein Park Road, Shepherd's Bush, London.

*16,346 (1914). Hammer, with rubber head. J. Davis, Erie, Pennsylvania.
16,366 (1914). Rubber impregnated diaphragm for cow milkers. A. Sabroe, Hadersleben, Germany.

16,373 (1914). Elastic hat band. M. M. Kempley, and E. Beaugard, 30 Cromwell Grove, West Kensington Park, London.

*16,382 (1914). Rubber parts for pipe couplings and valves. E. J. Rohrbacher, 701 East Pike street, Seattle, Washington.

16,403 (1914). Rubber tubes in sheet piling joints. E. W. Moir, 10 Victoria street, Westminster.

*16,475 (1914). Rubber former for producing a raised pattern on felt hats, etc. A. Turner, Danbury, Connecticut.

*16,579 (1914). Spring wheels with continuous outer resilient suspension ring. W. A. Leet, A. White, and A. H. Shoemaker—all of 402 Panama Building, Portland, Oregon.

*16,596 (1914). Inflatable pneumatic tubes in life boat construction. J. Kertesz, 110 Madison street, Pottstown, Pennsylvania.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 17, 1915.]
16,645 (1914). Vacuum cleaning apparatus. C. E. Cherry, 401 Anlaby Road, Kensington-upon-Hull.

16,715 (1914). Tire protector. H. G. Powell, "The Myrtles," Mellish Road, Walsall.

16,740 (1914). Elastic band closure for military coat sleeve pockets. E. Court, 70 Ossett Road, Wakefield, Yorkshire.

16,772 (1914). Toy with elastic covering. E. Sandow, 32 St. James' street, London.

16,789 (1914). Detachable rim attachments. H. Wade, 111 Hatton Garden, London.

17,019 (1914). Tire attachments to rims. R. T. Smith, 111 Lovely Lane, Warrington, Lancashire.

17,035 (1914). Securing solid rubber tires to rims. M. Polack, Waltershausen, Gotha, Germany.

17,045 (1914). India rubber apparatus for aerating liquids. Akt.-Ges. Metzeler & Co., Westendstrasse, Munich, Germany.

17,150 (1914). Toy projectile having a rubber head. H. Sauer, 5 Fuchsstrasse, Nürnberg, Germany.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 1, 1915.]
17,614 (1914). Elastic garter. F. Dawkins, 64 Belgrave Gardens, Chester Road, Wansstead, London.

*17,631 (1914). Elastic fabric for corsets. W. Kops, 490 West End avenue, Manhattan, New York.

*17,637 (1914). Valve comprising a rubber face. W. H. Taylor, 503 Market street, San Francisco, and I. L. Peterson, Burlingame—both in California.

*17,642 (1914). Dress shield. V. Guinzburg, 725 Broadway, Manhattan, New York.

17,647 (1914). Rubber in joint-making packing. J. T. Billson, Upper Toll street, North Shields, Northumberland.

17,660 (1914). Goloshes. Selfridge & Co., 400 Oxford street, and L. H. Nordon, 38 Mildmay Park—both in London.

*17,666 (1914). Non-skid devices. J. Kopecky, 1113 Herick avenue, Racine, Wisconsin.

17,740 (1914). Improvement in teat cup for cow milkers. J. Wilaert, Mount Hobson Road, Remuera, Auckland, New Zealand.

17,766 (1914). Pneumatic tire. D. R. Shewan, 1541 22nd avenue East, Vancouver, Canada.

17,815 (1914). Rubber in sanitary traps. J. Murphy, 223 School Road, Crookes, Sheffield.

17,883 (1914). Apparatus for washing drinking vessels. J. C. Sumner, 145 Church street, Preston, Lancashire.

NEW ZEALAND.

[ABSTRACTED IN THE PATENT OFFICE JOURNAL, OCTOBER 28, 1915.]

36,239 (1915). Combined tire valve and patch of india rubber. C. E. Baker, 34 Blue street, Carmarthen, Wales.

36,258 (1915). Pneumatic tire cover reinforcement or repair. F. W. Farr, Reclaim Works, Henry street, Northampton, England.

36,599 (1915). Hollow rubber valve in closet flushing apparatus. R. W. H. Ramsay, Palmerston North, New Zealand.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

476,791 (December 17, 1914). Method of protecting auto tires. R. di Martino.

476,825 (December 22). Pneumatic vehicle wheel. G. R. Taylor and R. Whyte.

476,866 (November 11). Mudguard for automobiles. W. Curtis.

476,875 (May 13). Improvement in shock absorbers for aeroplanes. R. Esnault-Pelterie.

476,924 (December 30). Wheel for road vehicles. O. E. S. Huss.

477,018 (January 4, 1915). Improvement relating to pneumatic tire rims. The Dunlop Rubber Co., Limited, and J. V. Worthington.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingénieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

TRADE MARKS.

ISSUED NOVEMBER 16, 1915.

81,489. Mishawaka Woolen Manufacturing Co., Mishawaka, Ind. The words *Yukon Musher*. For footwear of rubber or in combination with other materials.

88,176. The Tire Store, Greensburg, Pa. Illustration of a truncate pyramid. For tires, inner tubes, bicycle tires composed of rubber and fabric or rubber or fabric.

88,532. C. A. Crane, Cleveland, Ohio. The word *Auto-O-Mint*. For chewing gum, etc.

88,983. Globe Rubber Tire Manufacturing Co., Inc., Trenton, N. J. Representation of a globe with the word *Globe*. For rubber tubes and tires.

89,446. E. W. Remick, Boston, Mass. The word *Exersizer*. For footwear made of rubber.

89,473. United & Globe Rubber Manufacturing Cos., Trenton, N. J. The word *Efficiency*. For rubber hose, rubber belting, rubber valves, rubber packings, etc.

89,544. H. Goldman & Co., Inc., New York. The word *Tour-Rain*. For coats.

89,890. The Mechanical Rubber Co., Jersey City, N. J.; Cleveland, Ohio, and New York. Representation of a bench vice. For friction tape.

ISSUED NOVEMBER 23, 1915.

88,343. Seabury & Johnson, East Orange, N. J., and New York. Representation of a gold Maltese cross. For impermeable surgical dressings, gutta percha tissue, mackintosh cloth, etc.

88,344. Seabury & Johnson, East Orange, N. J., and New York. The words *Gold Cross Brand*. For impermeable surgical dressings, gutta percha tissue, mackintosh cloth, etc.

88,956. Goodyear's India Rubber Glove Manufacturing Co., New York, and Naugatuck, Conn. The word *Atos*. For water bottles, syringes and combinations of the two.

89,522. J. H. Price, Columbus, Ohio. The words *Stride Righter*. For rubber and leather shoes for men and women.

89,583. M. L. Margolish, New York. The word *Meritas*. For armbands.

89,769. O'Sullivan Rubber Co., Portland, Me., and New York. The words *Next To Wings*. For rubber heels for boots and shoes.

ISSUED NOVEMBER 30, 1915.

89,199. Traveller Tire & Tube Co., Inc., New York, N. Y. The word *Traveller*. For rubber tires and tubes.

89,581. Alfred A. Kohn, New York, N. Y. Illustration of a wheel cart tandem. For boots and shoes of leather, cloth and rubber.

89,931. A. Stein & Co., Chicago, Ill. Illustration of a gentleman putting on a garter. For garters.

ISSUED DECEMBER 7, 1915.

87,843. Goodyear Rubber Co., Middletown, Conn. The words *Tri-Sole Steward*. For rubber boots and shoes.

88,174. Romort Manufacturing Co., Seattle, Wash. The word *Romort*. For rubber valve packing or gaskets.

89,157. Oneida Community, Limited, Oneida, N. Y. The word *Community*. For fountain pens, rubber and combination erasers, etc.

89,324. The Rubber Products Co., Barborton, Ohio. The word *Stronghold*. For elastic vehicle tires.

89,532. Revere Rubber Co., Providence, R. I. The word *Nobby*. For rubber horseshoe pads.

89,884. I. W. Hoyer, Philadelphia, Pa. The word *Vel-Vo-Loid*. For a synthetic rubber compound to be used in the waterproofing of textile fabrics.

DESIGNS.

ISSUED NOVEMBER 16, 1915.

48,150. Toy balloon. F. F. Brucker, assignor to The Miller Rubber Co.—both of Akron, Ohio.

48,159. Bowl for fountain syringes. R. B. Newcome, Amarillo, Tex.

ISSUED DECEMBER 7, 1915.

48,244. Elastic vehicle tire. M. J. Del Grego, Akron, Ohio.

48,427. Vehicle tire. M. J. Gillen, Cleveland, Ohio, assignor to The Standard Tire & Rubber Manufacturing Co., a corporation of Ohio.

48,253. Tire tread or similar article. J. S. Patterson, Boston, assignor to Needham Tire Co., Needham—both in Massachusetts.

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

BUSINESS in heavy chemicals, pigments and fillers was good during December and prices in all lines were steady. The advances made during November have been maintained in practically every instance. Pig lead was quoted at 5¼ cents per pound, most of the month, advancing in the fourth week to 5.4 cents per pound. There was no immediate corresponding rise in the lead products, although it may be expected shortly.

The soda situation is described as exceedingly strong, with the basic material in an oversold condition. The supply of caustic soda is short.

There is an enormous demand for sulphuric acid, and prices are nominal. The official valuation of sulphuric acid exported in September of 1915 is \$93,664, while that corresponding for September a year ago is \$4,682. Valuations of sulphuric acid exportations for corresponding nine months' period ending September 30 were, for 1914, \$70,705; for 1915, \$774,747—an increase of about 996 per cent.

The conditions of last month still obtain with regard to prices and supply of lithopone and zinc oxides, both foreign and domestic. Aniline (spot) is declining somewhat, although still excessively high. Benzol is practically unobtainable. Solvents are higher than a month ago.

The supply of chalk for whiting manufacture is short and prices uncertain.

Barytes remain very steady, at slightly higher prices than a month ago. Domestic sources are supplying the entire American demand.

Future supplies of some materials are uncertain, and therefore consumers have no reliable basis for calculating costs. In the case of lead and zinc pigments, prices are fairly well defined for the first half of 1916.

PRICES OF CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK, DECEMBER 30, 1915.

Subject to change without notice.

Acetone (drums)	lb.	\$0.35	@ \$0.40
Acid, acetic, 28 per cent. (bbls.)	lb.	.06	@ .07
glacial, 99% (carboys)	lb.	.30	@ .35
Aluminum Flake (carloads)	ton	18.00	@ 20.00
Ammonium carbonate		None	
Antimony, crimson, sulphuret of (casks)	lb.	.80	@ .85
golden, sulphuret of (casks)	lb.	.65	@ .70
Asbestine	ton	19.00	@ 20.00
Asbestos	lb.	.04	@ .05
Asphaltum "G" Brilliant	lb.	.09	@
Barium sulphate, precipitated	ton	120.00	@
Barytes, pure white	ton	19.50	@ 21.00
off color	ton	17.50	@
Basofor	ton	120.00	@
Benzol, pure	gal.	.80	@
Beta-Naphthol	lb.	None	
Black Hypo	lb.	.39	@ .40
Bone ash	lb.	.10	@
black	lb.	.02½	@ .10
Cadmium tri-sulphate		None	
yellow		None	
Cantella gum	lb.	.27½	@ .35
Carbon, bisulphide (drums)	lb.	.07½	@ .08
black (cases)	lb.	.06	@ .15
tetrachloride (drums)	lb.	.18	@
Caustic soda, 76 per cent. (bbls.)	cwt.	6.00	@ 7.00
Chalk, precipitated, extra light	lb.	.05	@
China Clay, domestic	ton	13.50	@ 15.00
imported	ton	22.00	@ 24.00
Chrome, green	lb.	.10	@ .12
yellow	lb.	.15	@ .20
Coal tar	gal.	.09	@
Cotton linters	lb.	.07	@ .12
Emarex	ton	70.00	@
Gas black	lb.	.07½	@
Gilsonite	ton	37.50	@ 42.50
Glycerine, C. P. (drums)	lb.	.53½	@ .56
Graphite, flake (250 to 400 pound bbl.)	lb.	.17½	@
powdered (250 to 400 pound bbl.)	lb.	.17½	@
Green oxide of chromium (casks)	lb.	.39	@ .42

Ground glass	lb.	\$0.02½	@ \$0.07
Iron oxide, red, reduced grades	lb.	.02½	@ .05½
red, pure	lb.	.05½	@ .09
Infusorial earth, powdered	ton	50.00	@
bolton	ton	60.00	@
Ivory, black	lb.	.08	@ .12
Indian red	lb.	.03½	@ .07
Lampblack	lb.	.04	@ .08
Lead, red oxide of	lb.	.07½	@ .07½
sublimed blue	lb.	.05½	@ .06½
white, basic carbonate	lb.	.06½	@ .06½
white, basic sulphate	lb.	.06	@ .06½
Lime, flour	lb.	.01	@ .01½
Litharge	lb.	.06½	@ .06½
English	lb.	None	
Lithopone, domestic	lb.	.08½	@ .10
Imported	lb.	.08½	@ .10½
Magnesia, carbonate	lb.	.05½	@ .06
calcined, heavy	lb.	.11	@
light	lb.	.25	@ .27½
Magnesite, calcined, powdered	ton	50.00	@ 60.00
Mica, powdered	lb.	.03½	@ .05
Mineral rubber	lb.	.01½	@ .04½
Naphtha, stove gasoline (steel bbls.)	gal.	.21	@
66@68 degrees	gal.	.25	@
68@70 degrees	gal.	.26	@
Oil, aniline	lb.	1.10	@ 1.40
linseed (bbl.)	gal.	.45	@ .67
palm	gal.	.08½	@ .08½
pine (cases)	gal.	.60	@
rapeseed	gal.	.90	@ .95
rosin, heavy body	gal.	.32	@ .36
tar (cases)	gal.	.25	@ .30
soluble aniline colors, yellow, orange, red, violet, blue, green	lb.	3.00	@ 3.50
Orange mineral, domestic	lb.	.09	@ .09½
Paragol	lb.	.07½	@
Petroleum grease	lb.	.04	@
Pine tar, retort	gal.	.14	@ .16
Pitch, burgundy	lb.	.04½	@ .05½
pine	lb.	.02½	@
Plaster of paris	lb.	1.50	@ 1.70
Prussian blue	lb.	1.50	@ 1.75
Pumice stone, powdered (bbls.)	lb.	.02	@ .03
Resin, Pontianak, refined	lb.	.10	@
granulated	lb.	.11	@ .12
fused	lb.	.10	@
Rosin (500 pound bbls.)	lb.	3.50	@ 8.65
Rotten stone, powdered	lb.	.02½	@ .04
Rubber black	lb.	.03	@
Rubber substitute, black	lb.	.07½	@ .08
white	lb.	.10	@ .13
Shellac, fine orange	lb.	.25	@ .28
Soapstone, powdered	ton	10.00	@ 12.00
Starch, corn, powdered	lb.	.02	@ .02½
Sulphur chloride (drums)	lb.	.08	@ .08½
Sulphur, flowers	cwt.	2.20	@ 2.60
Sulphuric acid, 66°	lb.	.02	@ .02½
Talc, American	ton	8.50	@ 13.00
French	ton	18.00	@ 25.00
Toluol, pure	gal.	5.00	@
Tripolite earth, powdered	ton	50.00	@
bolton	ton	60.00	@
Turpentine, pure gum spirits	gal.	.54½	@ .55
wood	gal.	.50	@
Ultramarine, blue	lb.	.09	@ .28
Vermilion, brilliant	lb.	.90	@ 1.00
Chinese	lb.	2.20	@ 2.35
English	lb.	2.10	@ 2.15
Wax, bayberry	lb.	.22	@ .24
beeswax, white	lb.	.47	@ .55
ceresin, white	lb.	.14	@ .16
carnauba	lb.	.22	@ .47
ozokerite, black	lb.	.40	@
green	lb.	.60	@ .75
montan	lb.	.28	@ .30
paraffin, refined, 118/120 m. p. (cases)	lb.	.04½	@
123/125 m. p. (cases)	lb.	.04½	@
128/130 m. p. (cases)	lb.	.05½	@
133/136 m. p. (cases)	lb.	.06½	@ .06½
crude, white, 117/119 m. p. (bbls.)	lb.	.03½	@
yellow, 124/126 m. p. (bbls.)	lb.	.03½	@
Whiting, Alba, factory	f. o. b. factory ton	7.00	@ 8.50
commercial	cwt.	.55	@ .65
gilders	" " cwt.	.65	@ .75
Paris white, American	" " cwt.	.85	@ .95
English cliffstone	" " cwt.	.90	@ 1.25
Wood pulp, XXX	ton	30.00	@
Yellow ochre	lb.	.02	@ .02½
Zinc oxide, American process, horsehead brand	lb.	.09	@ .09½
"special"	" " f. o. b. factory lb.	.08½	@ .08½
"XXX red"	" " lb.	.16½	@ .16½
French process, green seal	" " lb.	.16	@ .16½
red seal	" " lb.	.17	@ .17½
white seal	" " lb.	.17	@ .17½
Zinc oxide, imported, white seal	lb.	.28	@
Zinc sulphide, pure	lb.	.07½	@ .14

Review of the Crude Rubber Market.

NEW YORK.

DECEMBER 30, 1915.

DECEMBER, 1915, will be remembered in the trade for the remarkable advances in prices it witnessed, gains of 25 cents per pound for First latex and 20 cents for Upriver fine being recorded, with the market still strong, and with an upward tendency at the end of the month. The forecast of \$1 rubber is already realized, and the present tone of the market indicates that \$1.10 may be reached before long—the highest price quoted since January 1, 1913.

The grounds on which this forecast was based are qualified to affect a market as sensitive as that for crude rubber, and in reality are those on which the forward movement that started early last November was founded. When it is considered that it has resulted thus far in the phenomenal gain of 38 cents per pound in plantation rubber, which was aided by recent rumors of interference with plantation shipments, threats of labor troubles in the Far East, menaces to rubber carriers and fear of an ultimate shortage of plantation rubber, the appearance of a prophet who could truly elucidate the peculiar possibilities of this market would be welcome.

First latex spot was quoted on December 1 at 75 cents, January to March deliveries at 73 cents and January to June deliveries at 71 cents. Upriver fine spot was firm and prices were moving steadily upward when the cables brought the news of the sinking of the steamship "Langton Hall" in the Mediterranean with 500 tons of rubber. This sufficed to demoralize the market, and new levels were established with First latex spot selling at 84 cents, January to June 77 cents and Upriver fine 69 cents.

Encouraged by heavy buying in London the upward movement continued as the month progressed, higher prices being quoted daily, even advances in Singapore freights affecting the market to the extent of a gain of at least a cent. Finally came, as a factor in the elevation of prices, the news of the closing of the Suez Canal to rubber shipments in the form of an announcement that two steamships carrying rubber—the "Bolton Castle" and the "Inverclyde"—had been routed via the Cape of Good Hope.

The local December market was characterized as a creation of the dealers, with a few of the smaller rubber mills in evidence, large buyers appearing to be satisfied with making inquiries. During the last week of the year, uncertainty prevailed in Beaver street, a strong market serving to steady the rapidly advancing prices. First latex spot was quoted on December 30 at \$1. Upriver fine was strong at 88 cents.

LONDON.

The market has displayed a firm and steady tone throughout the month. Such changes as have occurred, and they have mainly been in an upward direction, have been due to extraneous causes, such as advances in freight rates, uncertainty of arrivals, difficulty in handling consignments on arrival, etc.

The demand is on a broader scale and a fair business has been transacted, with prices steady, the demand from home manufacturers being the main support of the market. Although shipments from producing centers show no falling off, for the reasons above stated, arrivals have been falling below the requirements for delivery which has promoted buying on the part of consumers of early stocks. The reported activity of enemy submarines in the Mediterranean has had the same effect.

The demand from the United States has been good and it is noted that in many cases buyers were at one time willing to enter into forward contracts at a slight advance on present figures, but prices eased off a little and there was less inclination to make advance arrangements.

SINGAPORE.

News from this important rubber market is scant and conditions are best indicated by the course of events at the weekly auctions. Our last report describes fine pale crêpe in exceptional demand and selling up to 57 cents. Highest price was 54, paid for fine ribbed smoked. Unsmoked sheet was also in demand, ribbed and plain, at 54 and 54½, a slight increase on previous quotations. The lower grades moved off freely and although bidding at the outset was slow, nearly all the offerings were disposed of.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and December 30, the current date:

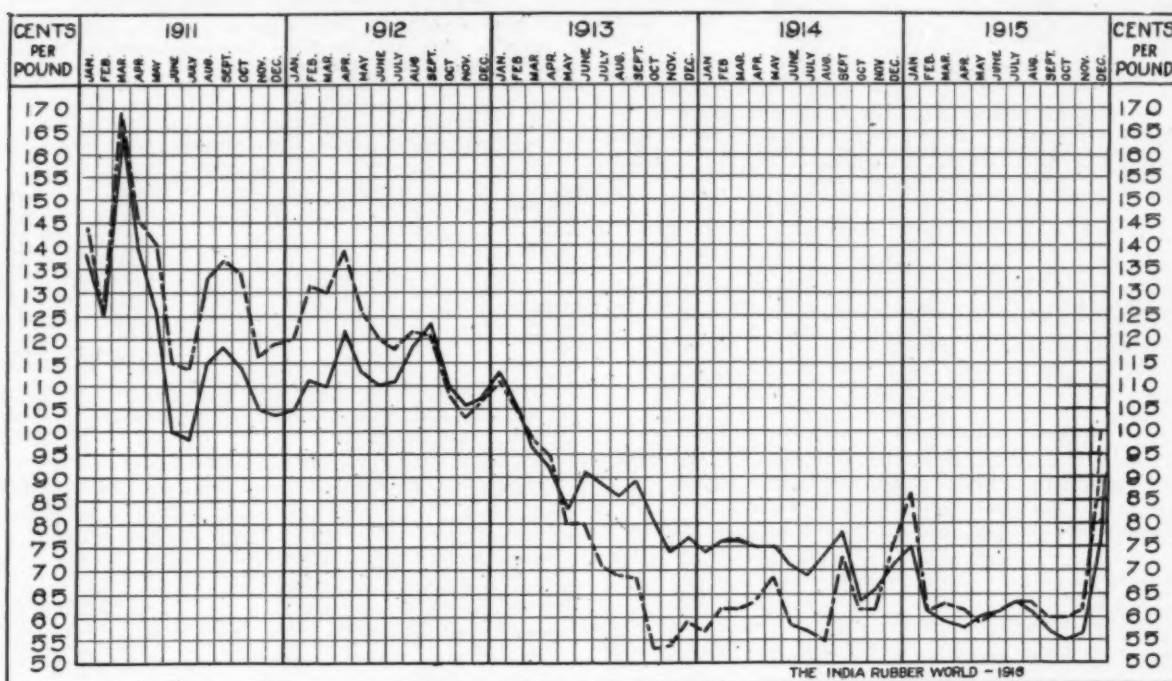
PABA.	Jan. 1, '15.	Dec. 1, '15.	Dec. 30, '15.
Upriver, fine, new.....	75	68	87
Upriver, fine, old.....	78	69	88
Islands, fine, new.....	69	65	80
Islands, fine, old.....			81
Upriver, coarse, new.....	59	58	72
Upriver, coarse, old.....			73
Islands, coarse, new.....	37	33	45
Islands, coarse, old.....			46
Cameta.....	40	35	49
Cauchó, ball, upper.....	61	58	75
Cauchó, ball, lower.....	58	56	73
PLANTATION HEVRA.			
Smoked sheet ribbed.....	91	75	99
First latex crepe... { near by } forward }	86	75	99
Fine sheets and biscuits, unsmoked.....		Practically Unobtainable	
CENTRALS.			
Corinto.....	58	52	69
Esmeralda, sausage.....	58	54	68
Nicaragua, scrap.....	60	53	68
Mexican plantation, sheet.....			75
Mexican, scrap.....	58	53½	67
Mexican, slab.....		54	68
Manicoba.....			55
Mangabeira, sheet.....	44	36	47½
Guayule.....	38	31	48
Balata, sheet.....	52	56	57
Balata, block.....	41	45	45
AFRICAN.			
Lopori, ball, prime.....	70	65	
Upper Congo, ball, red.....			
Rio Nunez Niggers.....		63	64
Conakry Niggers.....		60	61
Massai, red.....			
Soudan Niggers.....			
Cameroon, ball.....	55		
Benguela No. 2.....	36	39	50
Accra, flake.....	35	35	48
EAST INDIAN.			
Assam.....		50	54
Pontianak.....	7½	6¼	7¼
Gutta Siak.....		11¼	12
Borneo III.....		38	34
Gutta Percha.....			
Red Maccassa.....		1.85	1.78

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York), advises as follows: "During December the money market has continued easy, and the demand for commercial paper good, as for several months past, the best rubber names going freely at 4@4½ per cent, and those not so well known at 4¼@5½ per cent, according to grade."

NEW YORK PRICES FOR NOVEMBER (NEW RUBBER).

	1913.	1914.	1915.
Upriver, fine.....	\$0.73@0.80	\$0.63@0.71	\$0.57@0.76
Upriver, coarse.....	.46@.49	.46@.53	.44@.62
Islands, fine.....	.66@.70	.50@.61	.54@.67
Islands, coarse.....	.28@.30	.27@.32	.27@.34
Cameta.....	.36@.37	.29@.34	.29@.36



Upriver Fine —————

First Latex Crepe - - - - -

CHART SHOWING FLUCTUATIONS IN PARA AND PLANTATION RUBBER FOR FIVE YEARS

The prices are spot quotations on the first of each month, and are indicated on imaginary vertical lines bisecting the spaces representing the months.

Plantation Rubber from the Far East.

TOTAL EXPORTS FROM MALAYA.

(From January to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore. Sept. 30.	Malacca. Oct. 31.	Penang. Sept. 30.	Port Swet- tenham. Oct. 31.	Total.
Great Britain pounds	23,623,400	6,617,032	17,702,865	23,695,003	71,638,300
Continent	3,583,334		745,599	24,640	4,353,573
Japan	1,705,915				1,705,915
Ceylon	222,050		437,866	1,269,159	1,929,075
United States	30,062,400		2,451,934		32,514,334
Australia	342,059				342,059
Total	59,539,158	6,617,032	21,338,264	24,988,802	112,483,256
Same period, 1914..	28,968,720	4,108,376	15,948,133	24,840,136	73,865,365
Same period, 1913..	19,172,056		11,334,533	22,244,550	52,751,139
Same period, 1912..	9,998,689		6,737,897	15,811,164	32,547,750

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to November 22, 1914 and 1915. Compiled by the Ceylon Chamber of Commerce.)

To—	1914.	1915.
Great Britain	17,199,129	21,561,403
United States	9,108,791	16,237,767
Belgium	2,984,009	
Germany	1,037,415	
Australia	571,773	725,017
France	326,152	497,892
Japan	243,818	260,421
Russia	105,212	332,200
Straits Settlements	42,535	119,933
Italy	1,772	
India	1,050	1,000
Canada and Newfoundland		392,495
Total	31,615,656	40,128,128

(Same period 1913, 22,536,349 pounds; same period, 1912, 12,083,717.)

The export figures of rubber given in the above table for 1914 include the imports re-exported. (These amount to 3,369,319 pounds.) To arrive at the total quantity of Ceylon rubber exported for that period deduct these imports from the total exports. The figures for 1915 are for Ceylon rubber only.

SINGAPORE.

Guthrie & Co., Ltd., report [November 3, 1915]:

There was a falling off in the quantity offered at the auction, some 226 tons being catalogued, 190 tons of which changed hands.

At the outset bidding was slow, but demand improved considerably during the course of the forenoon.

In the afternoon the tone was quieter.

Fine pale crepe was in exceptional demand and sold up to \$136, an increase of \$2. Fine ribbed smoked sheet fetched the top price of the sale, viz.: \$137, all parcels selling readily.

Unsmoked sheet was wanted, ribbed and plain, at \$127 and \$125 showing improvements of \$2 and \$3 respectively.

The lower grades moved off freely at an average increase of \$3.

There was very little scrap on offer.

The following was the course of values:

	In Singapore Picul.	Sterling equivalent per pound in London.	Equivalent per pound in cents.
Sheet, fine ribbed smoked....	\$132@137	2/ 6 3/4 @ 2/ 7 3/4	62.33@64.36
Sheet, fair to good ribbed smoked	127@131	2/ 5 3/4 @ 2/ 6 1/4	60.05@61.83
Sheet, plain smoked	125@127	2/ 5 1/4 @ 2/ 5 3/4	59.29@60.05
Sheet, ribbed unsmoked	119@127	2/ 4 @ 2/ 5 3/4	56.76@60.05
Sheet, plain unsmoked	119@125	2/ 4 @ 2/ 5 3/4	56.76@59.29
Crepe, fine pale	135@136	2/ 7 1/2 @ 2/ 7 3/4	63.60@63.85
Crepe, good pale	133@134	2/ 6 3/4 @ 2/ 7 1/2	62.58@63.09
Crepe, fine brown	129@131	2/ 6 1/4 @ 2/ 6 3/4	61.06@61.83
Crepe, good brown	122@128	2/ 4 1/2 @ 2/ 5 1/4	58.02@60.56
Crepe, dark	110@121	2/ 2 1/2 @ 2/ 4 1/4	52.95@57.52
Crepe, bark	98@113	1/ 11 1/4 @ 2/ 2 3/4	47.89@54.22
Scrap, virgin	80@ 94	1/ 7 3/4 @ 1/ 10 1/4	40.04@46.12
Scrap, loose	68@108	1/ 5 1/4 @ 2/ 1 3/4	34.97@51.95

* Picul = 133 1/2 pounds.

Quoted in S. S. dollars = 2/4 [56 cents].

PLANTATION RUBBER EXPORTS FROM JAVA AND MADURA.

EXPORTS TO—	September.		Nine Months Ending September 30.	
	1914.	1915.	1914.	1915.
Holland				
Ficus ..pounds	5,830	7,187	39,607	36,450
Hevea	229,000	546,000	2,178,000	2,327,600
Hevea (to order)	11,000		554,400	4,400
Manihot (ceara)	8,241		134,275	16,733
Castilloa	3,652	770	45,602	14,549
Total	257,723	553,957	2,951,884	2,399,732
Great Britain				
Ficus		13,134	39,180	53,255
Hevea	715,000	470,800	2,855,600	3,669,600
Manihot (ceara)		6,215	27,854	25,593
Castilloa		8,705	20,896	77,055
Total	715,000	498,854	2,943,530	3,824,503
Belgium				
Ficus			462	
Hevea			550,000	
Total			550,462	
France				
Hevea			6,600	
United States				
Hevea	19,800	499,400	118,800	5,698,000
Manihot (ceara)				8,692
Total	19,800	499,400	118,800	5,706,692
Germany				
Hevea			79,200	
Castilloa			2,735	
Total			81,935	
Singapore				
Ficus	359		686	13,171
Hevea	13,200	77,000	187,000	523,600
Ceara			260	
Total	13,559	72,000	187,946	536,771
Australia				
Manihot (ceara)		282		282
Castilloa		317		317
Total		599		599

Japan	Hevea	2,200	.....	213,400
Other Countries..	Ficus	1,426	249	1,969
	Hevea	15,400	.....	114,400
Total		16,826	249	116,369
Grand Total		1,006,082	1,648,836	6,841,406
				12,798,066

FEDERATED MALAY STATES RUBBER EXPORTS.

An official cablegram received from Kuala Lumpur reports that the export of plantation rubber from the Federated Malay States during the month of November amounted to 4,636 tons, as compared with 4,120 tons in October, and 2,889 tons in the corresponding month last year.

The following is a comparative table showing the exports for three years:

	1913.	1914.	1915.
January	2,131	2,542	3,473
February	1,757	2,364	3,411
March	1,737	2,418	3,418
April	1,626	2,151	2,777
May	1,225	2,069	2,708
June	2,005	2,306	3,403
July	1,781	2,971	3,687
August	2,363	1,850	3,796
September	2,000	2,879	3,984
October	2,160	2,897	4,120
November	2,062	2,889	4,636
Total	20,847	27,336	39,413

*In the original statement for September, the total exports were returned at 3,334 tons, or 650 tons below the actual amount, as now corrected.

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official cablegram received from Singapore announces that the export of plantation rubber from the Straits Settlements during the month of November amounted to 4,292 tons as compared with 2,641 tons in October and 2,370 tons in the corresponding month last year. The total for eleven months of the present year is 31,886 tons compared with 17,393 tons last year and 10,672 tons for the corresponding period in 1913. The following is a comparative table showing the exports for three years:

	1913.	1914.	1915.
January	784	1,181	2,576
February	743	1,703	2,741
March	898	1,285	2,477
April	762	1,548	1,978
May	814	1,309	3,588
June	812	1,480	2,249
July	1,120	1,584	2,324
August	1,315	1,325	2,295
September	1,057	1,602	4,725
October	1,144	2,006	2,641
November	2,223	2,370	4,292
Total	10,672	17,393	31,886

These figures include trans-shipments of rubber from various places in the neighborhood of the Straits Settlements, such as Borneo, Java, Sumatra and the non-Federated Malay States as well as rubber actually exported from the colony, but do not include rubber exports from the Federated Malay States.

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weights in Pounds.]

NOVEMBER 26.—By the steamer *Francis* from Pará, Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown.....	158,200	29,600	73,400	19,400	280,600
Robinson & Co.....	84,700	9,400	31,400	200	125,700
Arnold & Zeiss.....	5,400	400	33,700	.....	39,500
General Rubber Co.....	24,700	3,800	38,300	.....	66,800
Adolph Hirsch & Co.....	19,114	2,998	6,146	3,175	31,433
Alden's Successors, Ltd.....	.....	.....	11,200	9,000	20,200
Hagemeyer & Brunn.....	.....	.....	3,000	.....	3,000
Henderson & Korn.....	.....	.....	11,500	9,000	20,500
J. T. Johnstone & Co.....	.....	.....	.....	.....	.....
Total	292,114	46,198	265,946	77,175	681,433

NOVEMBER 26.—By the steamer *Gregory* from Iquitos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
G. Amsinck & Co.....	12,400	400	5,200	125,200	143,200
Chartered Bank of Spanish America	4,300	.....	2,800	100,900	108,000
H. C. Kupper.....	36,200	.....	17,800	30,500	84,500
H. A. Astlett & Co.....	30,000	3,400	8,900	32,000	74,300
W. R. Grace & Co.....	12,500	.....	3,400	23,100	39,000
J. T. Johnstone & Co.....	27,500	.....	8,000	.....	35,500
Rumsey & Greutert Co., Inc.....	2,500	.....	600	3,000	6,100
Toledano Exporting Co.....	.....	.....	3,000	1,500	4,500
Total	125,400	3,800	49,700	316,200	495,100

NOVEMBER 26.—By the steamer *Gregory* from Pará, Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown.....	71,300	9,000	28,800	70,300	179,400
Arnold & Zeiss.....	245,500	10,300	52,900	33,200	341,900
Robinson & Co.....	144,800	300	45,800	400	191,300
H. A. Astlett & Co.....	47,300	28,900	105,800	7,900	189,900
Henderson & Korn.....	37,000	8,600	28,500	3,800	77,900
General Rubber Co.....	.....	.....	71,000	.....	71,000
Alden's Successors, Ltd.....	4,123	16,128	39,705	.....	59,954
G. Amsinck & Co.....	33,800	1,500	13,500	48,800	97,600
Adolph Hirsch & Co.....	22,200	4,000	6,600	.....	35,400
Cowdrey & Co.....	5,100	.....	1,000	.....	6,100
Total	611,123	78,726	393,605	115,600	1,199,054

PARA RUBBER VIA EUROPE.

	Pounds.
NOVEMBER 26.—By the <i>Panama</i> =Colon:	
W. R. Grace & Co. (Fine).....	7,500
NOVEMBER 29.—By the <i>Ancon</i> =Colon:	
G. Amsinck & Co. (Caucho).....	28,000
DECEMBER 1.—By the <i>Alliance</i> =Colon:	
G. Amsinck & Co. (Fine).....	12,500
G. Amsinck & Co. (Coarse).....	1,200
W. R. Grace & Co. (Fine).....	37,500
W. R. Grace & Co. (Coarse).....	2,000
Total	53,200

AFRICANS.

	Pounds.
NOVEMBER 23.—By the <i>Etiopian</i> =Liverpool:	
Arnold & Zeiss	56,000
Earle Bros.	8,000
Total	64,000
NOVEMBER 23.—By the <i>Hindoo</i> =Hull:	
Arnold & Zeiss	35,000
Robert Badenhop	7,500
Total	42,500
NOVEMBER 26.—By the <i>Baltic</i> =Liverpool:	
Henderson & Korn	11,200
Various	4,500
Total	15,700
NOVEMBER 29.—By the <i>Orduna</i> =Liverpool:	
Rubber Trading Co.....	19,400
NOVEMBER 30.—By the <i>Philadelphia</i> =London:	
Henderson & Korn	4,500
DECEMBER 1.—By the <i>Roma</i> =Lisbon:	
Edward Maurer Co., Inc.....	80,000
S. R. Sequerra	3,500
Total	83,500

	Pounds.
DECEMBER 2.—By the <i>Saron Monarch</i> =London:	
Arnold & Zeiss	45,000
DECEMBER 3.—By the <i>Adriatic</i> =Liverpool:	
Robert Badenhop	22,500
DECEMBER 6.—By the <i>St. Louis</i> =Liverpool:	
Edward Maurer Co., Inc.....	7,000
Various	33,500
Total	40,500
DECEMBER 6.—By the <i>Lafayette</i> =Bordeaux:	
Various	22,500
DECEMBER 6.—By the <i>Terkoku Maru</i> =Lisbon:	
W. H. Stiles	43,000
Edward Maurer Co., Inc.....	45,000
Robert Badenhop	22,500
Total	112,500
DECEMBER 9.—By the <i>Foyle</i> =Liverpool:	
General Rubber Co.....	50,000
J. T. Johnstone & Co.....	13,500
Earle Bros.	11,200
Total	74,700
DECEMBER 13.—By the <i>Cymric</i> =Liverpool:	
Charles T. Wilson Co., Inc.....	11,200
DECEMBER 14.—By the <i>Galileo</i> =Hull:	
Alden's Successors, Ltd.....	46,444
DECEMBER 16.—By the <i>Philadelphia</i> =Liverpool:	
Edward Maurer Co., Inc.....	2,000
DECEMBER 17.—By the <i>Bassano</i> =Hull:	
Arnold & Zeiss	90,000
DECEMBER 20.—By the <i>Den of Oeil</i> =Liverpool:	
Arnold & Zeiss	120,000
J. T. Johnstone & Co.....	24,000
Total	144,000

	Pounds.
DECEMBER 20.—By the <i>Luisa</i> =Lisbon:	
Edward Maurer Co., Inc.....	70,000
DECEMBER 22.—By the <i>Patria</i> =Lisbon:	
Edward Maurer Co., Inc.....	56,000
W. H. Stiles	22,500
S. R. Sequerra	3,000
Total	81,500

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

	Pounds.
NOVEMBER 24.—By the <i>Metapan</i> =Port Limon:	
Isaac Brandon & Bros.....	700
Fruit Despatch Co.....	300
Total	1,000
NOVEMBER 26.—By the <i>Panama</i> =Colon:	
G. Amsinck & Co.....	8,100
A. M. Capen's Sons.....	2,300
Lawrence Johnson & Co.....	4,900
Muller, Schall & Co.....	3,000
Dumarest Bros.	1,200
W. R. Grace & Co.....	2,300
J. S. Sembrada & Co.....	2,200
Herman Wolf & Co.....	900
Pottberg, Ebeling & Co.....	3,300
Mecke & Co.....	4,000
Lanman & Kemp.....	2,100
Gontard & Co.....	3,400
R. G. Barthold	100
Meyer Hecht	100
American Trading Co.....	2,000
Andean Trading Co.....	7,300
Total	47,200
NOVEMBER 27.—By the <i>Monterey</i> =Mexico:	
Lawrence Johnson & Co.....	1,500
H. Marquardt & Co.....	10,000
Total	11,500

	Pounds.	
J. A. Medina & Co.	1,000	
General Export & Commission		
Co.	200	
Various	3,500	16,200
NOVEMBER 29.—By the <i>Tivies</i> =Puerto Cortez:		
J. S. Sembrada & Co.	3,000	
Goldsmith & Co.	1,000	
Gontard & Co.	500	
V. Cairo Co., Inc.	100	4,600
NOVEMBER 29.—By the <i>Sao Paulo</i> =Bahia:		
Lawrence Johnson & Co.	5,000	
NOVEMBER 29.—By the <i>Pastores</i> =Port Limon:		
Isaac Brandon & Bros.	1,500	
H. Marquardt & Co.	600	
Gontard & Co.	400	
Graham, Hinkley & Co.	400	2,900
NOVEMBER 29.—By the <i>Proteus</i> =New Orleans:		
E. Steiger & Co.	10,000	
DECEMBER 3.—By the <i>Zacapa</i> =Colombia:		
Pottberg, Ebeling & Co.	5,000	
G. Amsinck & Co.	2,500	7,500
DECEMBER 6.—By the <i>Mexico</i> =Mexico:		
General Export & Commission		
Co.	4,000	
H. Marquardt & Co.	2,500	
Various	6,000	12,500
DECEMBER 6.—By the <i>Bygland</i> =Laguna:		
H. Marquardt & Co.	2,000	
DECEMBER 7.—By the <i>Calamares</i> =Port Limon:		
Isaac Brandon & Bros.	1,500	
DECEMBER 8.—By the <i>Cristobal</i> =Colon:		
G. Amsinck & Co.	31,100	
Muller, Schall & Co.	1,200	
Lawrence Johnson & Co.	29,400	
J. S. Sembrada & Co.	6,000	
Pablo, Calvet & Co.	12,000	
Pottberg, Ebeling & Co.	5,200	
Andean Trading Co.	2,200	
W. R. Grace & Co.	4,200	
Silva Bussenius & Co.	1,400	
Mecke & Co.	700	93,400
DECEMBER 9.—By the <i>Colon</i> =Colon:		
G. Amsinck & Co.	6,700	
Herman Wolff & Co.	6,000	
Pablo, Calvet & Co.	3,500	
Pottberg, Ebeling & Co.	7,000	
A. M. Capen's Sons.	3,500	
C. E. Griffin.	2,000	
J. S. Sembrada & Co.	700	
Piza, Nephews & Co.	4,500	
Fedaque Bros.	500	
A. Angel & Co.	700	35,100
DECEMBER 10.—By the <i>Carrillo</i> =Cartagena:		
G. Amsinck & Co.	1,500	
A. Held.	1,000	2,500
DECEMBER 11.—By the <i>El Sol</i> =Galveston:		
Various		*17,000
DECEMBER 13.—By the <i>Norden</i> =Mexico:		
American Trading Co.	20,000	
J. S. Sembrada & Co.	600	
J. A. Medina & Co.	600	
Pablo, Calvet & Co.	200	
H. Marquardt & Co.	200	21,600
DECEMBER 13.—By the <i>Tennyson</i> =Bahia:		
Adolph Hirsch & Co.	50,000	
DECEMBER 13.—By the <i>Sixola</i> =Puerto Cortez:		
West Coast Rubber Co.	1,000	
J. S. Sembrada & Co.	1,000	
Eggers & Heinlein Co.	1,500	3,500
DECEMBER 14.—By the <i>Tenadores</i> =Port Limon:		
Isaac Brandon & Bros.	2,000	
DECEMBER 15.—By the <i>El Oriente</i> =Galveston:		
Various		*35,000
DECEMBER 17.—By the <i>Santa Marta</i> =Colombia:		
G. Amsinck & Co.	500	
International Trading Co.	1,500	
Pottberg, Ebeling & Co.	1,000	
Pablo, Calvet & Co.	500	
Andean Trading Co.	1,500	5,000
DECEMBER 17.—By the <i>Advance</i> =Colon:		
Gravenhorst & Co.	1,000	
DECEMBER 17.—By the <i>Guanatama</i> =Mexico:		
Harburger & Stack.	6,000	
J. A. Medina & Co.	1,000	
General Export & Commission		
Co.	500	7,500
DECEMBER 20.—By the <i>Morro Castle</i> =Mexico:		
J. A. Medina & Co.	6,000	
Lawrence Johnson & Co.	500	
Various	10,000	16,500
DECEMBER 20.—By the <i>El Occidente</i> =Galveston:		
Various		*45,000
DECEMBER 23.—By the <i>Panama</i> =Colon:		
G. Amsinck & Co.	18,800	
Mecke & Co.	1,000	
R. G. Barthold.	1,000	
C. E. Griffin.	8,000	
Andean Trading Co.	2,200	
Isaac Brandon Bros.	400	
Dumarest Bros.	600	32,000

MANIHOT AND CAUCHO.

	Pounds.	
NOVEMBER 22.—By the <i>Hubert</i> =Parnahyba:		
J. H. Rossbach & Bros (Mani- coba)	32,000	
J. H. Rossbach & Bros. (Man- gabeira)	1,000	
J. H. Rossbach & Bros. (Cau- cho)	1,200	34,200
NOVEMBER 22.—By the <i>Natal</i> =Parnahyba:		
Thomsen & Co (Mangabeira)	5,000	
Various (Ceara)	76,000	81,000
DECEMBER 10.—By the <i>Stephen</i> =Ceara:		
J. H. Rossbach & Bros. (Ceara)	90,000	
Various (Ceara)	129,000	219,000
DECEMBER 10.—By the <i>Stephen</i> =Pernambuco:		
Lawrence Johnson & Co. (Manicoba)	9,000	

PLANTATION RUBBER.

	Pounds.	
NOVEMBER 23.—By the <i>Indraghiri</i> =Singapore:		
L. Littlejohn & Co.	450,000	
General Rubber Co.	360,000	
Henderson & Korn.	335,000	
J. T. Johnstone & Co.	115,000	
Arnold & Zeiss.	135,000	
W. R. Grace & Co.	135,000	
Edward Maurer Co., Inc.	80,000	
Charles T. Wilson Co., Inc.	75,000	
Rumsey & Greutert Co., Inc.	56,000	
Goodyear Tire & Rubber Co.	45,000	
Alden's Successors, Ltd.	56,027	
Robinson & Co.	22,500	
Malaysian Rubber Co.	4,500	
Rubber Trading Co.	4,000	
H. R. Jeffords.	3,500	
Various	43,973	1,920,500
NOVEMBER 24.—By the <i>Lancastrian</i> =London:		
Meyer & Brown.	22,500	
Edward Maurer Co., Inc.	40,000	
Robert Badenhop.	4,500	
Charles T. Wilson Co., Inc.	40,000	
Goodyear Tire & Rubber Co.	235,000	
General Rubber Co.	105,000	
W. H. Stiles.	11,200	
L. Littlejohn & Co.	4,480	462,680
NOVEMBER 26.—By the <i>Finland</i> =London:		
Goodyear Tire & Rubber Co.	80,000	
Edward Maurer Co., Inc.	11,200	91,200
NOVEMBER 26.—By the <i>City of Athens</i> =Colombo:		
Meyer & Brown.	58,000	
L. Littlejohn & Co.	58,408	
Goodyear Tire & Rubber Co.	6,000	
Hood Rubber Co.	22,500	
Henderson & Korn.	33,500	
Adolph Hirsch & Co.	22,500	
Robinson & Co.	11,200	
Arnold & Zeiss.	11,200	
W. R. Grace & Co.	11,200	
J. T. Johnstone & Co.	34,000	
W. H. Stiles.	11,200	
Various	53,792	333,500
NOVEMBER 29.—By the <i>Lincluden</i> =Colombo:		
Meyer & Brown.	56,000	
L. Littlejohn & Co.	115,600	
Adolph Hirsch & Co.	20,000	
Goodyear Tire & Rubber Co.	8,000	
Arnold & Zeiss.	67,000	
Robinson & Co.	35,000	
Henderson & Korn.	80,000	
Various	104,400	486,000
NOVEMBER 29.—By the <i>Ardgryfe</i> =London:		
Meyer & Brown.	52,000	
General Rubber Co.	450,000	
The B. F. Goodrich Co.	225,000	
L. Littlejohn & Co.	348,200	
Arnold & Zeiss.	115,000	
Henderson & Korn.	11,200	
Robert Badenhop.	67,000	
Charles T. Wilson Co., Inc.	135,000	
Alden's Successors, Ltd.	3,500	
Robinson & Co.	25,000	
Rumsey & Greutert Co., Inc.	28,000	
Michelin Tire Co.	22,250	
W. H. Stiles.	11,200	
J. T. Johnstone & Co.	2,000	1,495,600
NOVEMBER 30.—By the <i>Gorontalo</i> =Batavia:		
Edward Maurer Co., Inc.	155,000	
J. T. Johnstone & Co.	157,500	
Stein, Hirsch & Co.	40,000	
Manhattan Rubber Manufactur- ing Co.	33,500	
G. Amsinck & Co.	10,500	
General Rubber Co.	245,000	
Goodyear Tire & Rubber Co.	225,000	
Rubber Trading Co.	52,200	
L. Littlejohn & Co.	216,338	
Alden's Successors, Ltd.	27,002	1,162,040
DECEMBER 2.—By the <i>Saxon Monarch</i> =London:		
Meyer & Brown.	70,000	
Rumsey & Greutert Co., Inc.	45,000	
Rubber Trading Co.	37,400	

	Pounds.	
Alden's Successors, Ltd.	489,833	
W. R. Grace & Co.	22,500	
General Rubber Co.	335,000	
J. T. Johnstone & Co.	34,000	
Robert Badenhop.	90,000	
Charles T. Wilson Co., Inc.	67,000	
L. Littlejohn & Co.	193,076	
Edward Maurer Co., Inc.	95,000	1,478,809
DECEMBER 3.—By the <i>Keelung</i> =Colombo:		
Meyer & Brown.	180,500	
General Rubber Co.	60,000	
L. Littlejohn & Co.	114,800	
Arnold & Zeiss.	60,000	
Henderson & Korn.	150,000	
Robinson & Co.	30,000	
J. T. Johnstone & Co.	11,000	
Alden's Successors, Ltd.	21,280	
Various	92,920	720,500
DECEMBER 3.—By the <i>Adriatic</i> =Liverpool:		
General Rubber Co.	22,500	
DECEMBER 6.—By the <i>Mississippi</i> =London:		
Goodyear Tire & Rubber Co.	260,000	
General Rubber Co.	130,000	
Edward Maurer Co., Inc.	96,000	486,000
DECEMBER 6.—By the <i>Indramudi</i> =Singapore:		
L. Littlejohn & Co.	763,620	
Henderson & Korn.	490,000	
The B. F. Goodrich Co.	315,000	
General Rubber Co.	250,000	
Arnold & Zeiss.	150,000	
Charles T. Wilson Co., Inc.	67,000	
Rumsey & Greutert Co., Inc.	50,000	
Edward Maurer Co., Inc.	45,000	
Hood Rubber Co.	33,500	
Goodyear Tire & Rubber Co.	33,500	
W. R. Grace & Co.	17,000	
J. T. Johnstone & Co.	16,000	
Alden's Successors, Ltd.	53,760	
Robert Badenhop.	12,500	
Robinson & Co.	6,000	
Rubber Trading Co.	4,000	
Various	90,120	2,383,500
DECEMBER 8.—By the <i>Pathan</i> =Singapore:		
L. Littlejohn & Co.	389,309	
Henderson & Korn.	290,000	
Arnold & Zeiss.	175,000	
General Rubber Co.	140,000	
J. T. Johnstone & Co.	82,000	
Goodyear Tire & Rubber Co.	60,000	
Firestone Tire & Rubber Co.	33,500	
Charles T. Wilson Co., Inc.	90,000	
Robert Badenhop.	75,000	
Alden's Successors, Ltd.	60,000	
Robinson & Co.	28,000	
Hood Rubber Co.	22,500	
W. R. Grace & Co.	12,000	
Edward Maurer Co., Inc.	7,000	
Rubber Trading Co.	4,000	
Alden's Successors, Ltd.	60,484	1,528,793
DECEMBER 10.—By the <i>Mesaba</i> =London:		
Meyer & Brown.	100,000	
Edward Maurer Co., Inc.	125,000	
Goodyear Tire & Rubber Co.	175,000	
Rubber Trading Co.	18,000	
Charles T. Wilson Co., Inc.	22,500	
L. Littlejohn & Co.	23,450	463,950
DECEMBER 10.—By the <i>Nieuw Amsterdam</i> =Rot- terdam:		
Alden's Successors, Ltd.	23,152	
Various	10,348	33,500
DECEMBER 17.—By the <i>Minnehaha</i> =London:		
Goodyear Tire & Rubber Co.	90,000	
General Rubber Co.	200,000	
Edward Maurer Co., Inc.	30,000	
Rubber Trading Co.	5,000	325,000
DECEMBER 18.—By the <i>St. Kentigern</i> =London:		
Meyer & Brown.	180,000	
Alden's Successors, Ltd.	702,264	
The B. F. Goodrich Co.	22,500	
J. T. Johnstone & Co.	50,500	
Michelin Tire Co.	22,500	
Rumsey & Greutert Co., Inc.	67,000	
Robinson & Co.	13,500	
Edward Maurer Co., Inc.	70,000	
General Rubber Co.	425,000	
Charles T. Wilson Co., Inc.	90,000	
L. Littlejohn & Co.	109,080	
Rubber Trading Co.	10,000	1,762,344
DECEMBER 23.—By the <i>Tropes</i> =London:		
Meyer & Brown.	24,000	
General Rubber Co.	90,000	
Rumsey & Greutert Co., Inc.	50,000	
Alden's Successors, Ltd.	500,000	
Hewitt Rubber Co.	2,200	
Henderson & Korn.	33,600	
L. Littlejohn & Co.	38,000	
Michelin Tire Co.	33,600	
Robinson & Co.	25,000	
Arnold & Zeiss.	70,000	
Edward Maurer Co., Inc.	135,000	
Charles T. Wilson Co., Inc.	2,200	1,003,600
DECEMBER 23.—By the <i>Minerie</i> =Colombo:		
Meyer & Brown.	230,000	
L. Littlejohn & Co.	130,000	
Arnold & Zeiss.	30,000	

Henderson & Korn.....	87,000
Edward Maurer Co., Inc.....	65,000
W. K. Grace & Co.....	11,200
J. T. Johnstone & Co.....	56,000
W. H. Stiles.....	2,200
Various.....	15,000
Total	626,400

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—OCTOBER, 1915.		
Imports:	Pounds.	Value.
India rubber.....	16,028,741	\$8,098,601
Balata.....	196,536	79,138
Gutta percha.....	53,919	9,415
Gutta jelutong (Pontianak).....	1,142,542	55,008
Total	17,421,738	\$8,242,162

Exports:		
India rubber.....	45,834	\$25,570
Balata.....	13,768	4,922
Rubber scrap.....	172,563	22,626
Total	232,165	\$53,118

PORT OF SAN FRANCISCO—OCTOBER, 1915.		
Imports:	Pounds.	Value.
India rubber.....	654,810	\$341,710
Gutta jelutong (Pontianak).....	56,259	1,904
Rubber scrap.....	4,930	187
Total	715,999	\$343,801

PORT OF BOSTON—NOVEMBER, 1915.		
Imports:	Pounds.	Value.
Gutta jelutong (Straits Settlements).....	226,718	\$4,693

Pounds. Value.		
Gutta percha (Straits Settlements).....	3,600	306
India rubber—		
Straits Settlements.....	86,866	36,638
British East Indies.....	22,400	12,944
England.....	75,441	33,329
Manufactures of India rubber.....	—	3,936
Total	415,025	\$91,846

Exports:		
India rubber, scrap.....	6,865	\$328
India rubber, belting, etc.....	—	22,156
India rubber boots.....	33,871	74,462
India rubber shoes.....	123,480	49,821
Automobile tires.....	—	2,163
All other manufactures of India rubber.....	—	57,565

PORT OF CHICAGO—NOVEMBER, 1915.		
Imports:	Pounds.	Value.
India rubber scrap or refuse fit only for remanufacture (Canada).....	42,778	\$3,036

PORT OF CLEVELAND—NOVEMBER, 1915.		
Imports:	Pounds.	Value.
India rubber.....	746,368	\$361,708
Rubber scrap.....	51,484	141
Manufactures of India rubber.....	—	\$2,853
Total	797,852	\$364,702

Exports:		
Manufactures of India rubber.....	—	\$68

PORT OF DETROIT—NOVEMBER, 1915.		
Imports:	Pounds.	Value.
Rubber scrap.....	684	\$41
Exports:		
Rubber scrap.....	35,790	\$2,455
Rubber reclaimed.....	2,577	221
Total	38,367	\$2,676

PORT OF NEW ORLEANS—NOVEMBER, 1915.		
Imports:	Pounds.	Value.
India rubber.....	77,448	\$31,505

PORT OF NIAGARA FALLS—NOVEMBER, 1915.		
Exports:	Pounds.	Value.
India rubber.....	200,731	\$103,249
Rubber scrap.....	20,544	800
Reclaimed rubber.....	66,658	7,787
Total	287,933	\$111,836

PORT OF PHILADELPHIA—NOVEMBER, 1915.		
Exports:	Pounds.	Value.
Rubber scrap.....	10,043	\$1,625

PORT OF PORT HURON—NOVEMBER, 1915.		
Imports:	Pounds.	Value.
Manufactures of India rubber.....	—	\$1,206

Exports:		
Rubber scrap.....	35,790	\$2,455
Manufactures of India rubber.....	—	1,690
Total	35,790	\$4,145

PORT OF SAN FRANCISCO—NOVEMBER, 1915.		
Imports:	Pounds.	Value.
India rubber.....	310,838	\$122,576

IMPORTS AND EXPORTS OF RUBBER AND RUBBER MANUFACTURES AT THE PORT OF NEW YORK.

	India Rubber.		Rubber Waste.		Rubber Manufactures.		Chicle.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Week ending November 30.....	38,102 packages	\$3,252,201	435	\$2,271	74	\$10,211	485	\$28,900
List issued December 11.....	3,623,122 pounds	1,917,281	93,173	5,163	—	—	—	—
List issued December 17.....	2,305,082	1,291,599	27,613	1,550	—	—	—	—
List issued December 24.....	7,085,561	3,430,237	45,373	3,126	—	—	40,000	12,448

In addition 17 packages of rubber substitutes were imported during the week ending November 30, value \$820; 198,955 pounds of gutta jelutong, value \$7,707, in issue of December 11; 13,851 pounds of balata, value \$4,267, in issue of December 17; rubber substitutes, value \$799; 20,544 pounds of rubber substitutes, value \$6,143; 1,431,685 pounds of gutta jelutong, value \$58,858; 153,963 pounds of gutta percha, value \$15,182.

EXPORTS.

October 16 to November 1, 1915, and all figures issued from November 23 to December 15, 1915.

MANUFACTURES TO—	Belting. Hose and Packing.	Footwear.		Tires.		Insulated Wire and Cable.	Other mfrs. of, India Rubber.	Fountain Pens.	Chewing Gum.	Reclaimed Rubber.	Scrap.
		Boots.	Shoes.	Auto.	Other tires and mfrs. of.						
Africa	\$80,038	\$2,790	\$4,005	\$44,815	\$796	\$2,967	\$5,534		\$408		
Argentina	7,002		251	21,546	9,077	8,587	16,670	\$285	11,258	\$439	
Australia	3,214		5,188	54,157		16,502	15,801	179	2,821		
Bolivia	1,157			2,013		2,105	69				
Brazil	5,041		1,776	32,883	10,067	54,722	33,178	409	776		
British East Indies				11,304			241				
British Guiana				423	55		112				
Canada	250	746	17,314	2,334	148	2,487	1,309	12	358		
Central America and Panama	12,971	1,430	518	11,866	8,764	27,039	7,311	330	3,505	5	
Chile	5,999	445	656	2,847	1,147	20,109	4,069		133		
China	1,519		45	979			417	9	2		
Colombia	1,410		489	2,545	441	1,722	1,205		158		
Dutch East Indies	832			11,995	9,466	67,634	320	85			
Dutch Guiana	460		48	703	744	768	983		21		
Ecuador	1,684		26	878	388		1,758		156		
France	321	108,908	25,786	204		4,761	81,248	272	1,313		\$1,015
Great Britain	70,918	185,800	46,934	1,248,765	248,581	43,961	207,810	1,943	32,858	28,899	\$3,679
Greece						171					
Holland				2,167	690	4,231	2,400				
India				7,666	3,917	21,258	3,580			22	
Italy	5,221		2,846	43,256	24,507	7,724	27,952	160			
Japan			1,123			1,627	1,263			1,237	
Korea	22		28				562				
Mexico	11,139			16,758	5,860	10,251	10,451		49	124	
New Zealand	174	484		23,438	20,784	91	10,346	200	2,040		239
Norway, Sweden and Denmark	1,148			3,498	1,306	28,990	8,277		240		
Oceania					409						
Peru	2,546			1,943		8,971	1,635		744		
Philippines	650		143	12,356	5,274	2,734	10,106		3,826		
Portugal				1,564		451	143				
Roumania				576		4,510					
Russia	807			25,839		780	375				
Siam							379				
Spain		379		2,561		1,344	4,774				
Straits Settlements				618	4,372		422				
Switzerland							930				
Uruguay	637		47	11,637	5,684	4,738	3,507				
Venezuela	29,126		66	28,256	1,687	3,780	2,655				
West Indies	17,923	33	1,325	69,306	24,676	21,016	44,164	446	463	119	3,444
Totals	\$262,239	\$301,016	\$109,037	\$700,892	\$388,840	\$377,038	\$511,287	\$4,724	\$61,151	\$30,823	\$48,377

In addition to the above the following were exported during the same period: To Great Britain, aeroplanes, value \$200,216; balata, value \$1,865; chicle, value \$1,047, and India rubber, value \$24,797. Aeroplanes valued at \$5,000 were exported to Argentina, and India rubber valued at \$30 was exported to Mexico.

*Heretofore these import figures were issued weekly, showing the imports for the preceding week. Since the end of November, 1915, however, the statistics, also issued weekly, include all import figures available on the date of issue not specifying the period covered by those figures. The first set of figures issued under this system appeared on Saturday, December 11, 1915.

†The export figures were formerly issued so as to specify the clearances each day. Since November 23, 1915, all figures issued are only those available on the day of issue regardless of the day or days of clearance. Evidently the figures issued on November 23 include all those available from November 1 to November 23, 1915.

UNITED STATES IMPORTS OF RUBBER AND RUBBER MANUFACTURES FOR YEAR ENDING JUNE 30, 1915.

	July 1, 1914, to June 30, 1915.	
	Pounds.	Value.
India rubber, gutta percha, etc. Unmanufactured—free.		
Balata, crude	2,473,228	\$963,384
Guayule gum	5,116,165	1,442,464
Gutta jelutong	14,766,765	704,613
Gutta percha, crude	1,776,851	258,132
Crude india rubber	171,429,176	82,812,928
Scrap rubber	10,584,494	827,778
Reclaimed rubber	918,628	112,220
Total	207,065,307	\$87,121,519
Manufactured—dutiable.		
Gutta percha		\$12,021
India rubber		\$34,901
Druggists' sundries of rubber		64,820
Hard rubber		186,307
Rubber sponges		3,681
Substitutes, elasticon, etc.		30,227
Total		\$831,957
Chicle: Crude	2,465,400	\$839,312
Refined	1,934,760	962,889
Total	4,400,160	\$1,802,201
Insulated wire, cable, etc.		\$43,362

RUBBER STATISTICS FOR CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED, FREE—	September, 1915.		Six Months Ending September, 1915.	
	Pounds.	Value.	Pounds.	Value.
Rubber and gutta percha, crude caoutchouc or india rubber:				
From Great Britain	1,122,746	\$525,256	2,473,630	\$1,283,562
United States	452,668	233,640	1,988,100	993,282
British Straits Settlements	11,374	6,313	22,574	11,659
Other countries			169,898	79,492
Total	1,586,788	\$765,209	4,654,202	\$2,367,995
Rubber, recovered:				
From Great Britain			4,392	\$2,482
United States	483,094	\$61,559	2,398,302	301,595
Total	483,094	\$61,559	2,402,694	\$304,077
Hard rubber, in sheets and rods:				
From United States	1,364	\$701	36,449	\$4,439
Rubber substitute:				
From Great Britain			10,820	1,166
United States	39,608	3,171	231,133	17,136
Total	39,608	\$3,171	241,953	\$18,302
Rubber, powdered, and rubber or gutta percha waste:				
From Great Britain			2,709	\$217
United States	161,223	\$10,515	569,349	41,430
Other countries	190	8	2,709	113
Total	161,413	\$10,523	574,767	\$41,760
Rubber thread, recovered:				
From United States	2,496	\$3,406	12,980	\$17,918
Balata, crude:				
From United States	311	\$171	1,644	\$991
Chicle, crude:				
From Great Britain			2,888	\$1,675
United States	13,989	\$4,205	173,691	67,452
British Honduras	107,664	\$40,592	616,964	225,015
Mexico			126,294	46,238
Total	121,653	\$44,797	919,837	\$340,380
MANUFACTURED, DUTIALE—	September, 1915.		Six Months Ending September, 1915.	
	General Tariff Value.	Prefer- ential Tariff Value.	General Tariff Value.	Prefer- ential Tariff Value.
Waterproof clothing:				
From Great Britain	\$357	\$20,713	\$2,835	\$231,829
United States	7,018		65,640	
Other countries			21	
Total	\$7,375	\$20,713	\$68,496	\$231,829
Hose, lined with rubber:				
From Great Britain				\$389
United States	\$4,872		\$37,395	
Mats and matting:				
From Great Britain				\$84
United States	\$143		\$784	
Packings:				
From Great Britain	\$30	\$155	\$110	\$972
United States	4,242		26,657	
Total	\$4,272	\$155	\$26,767	\$972

MANUFACTURED, DUTIALE—	September, 1915.		Six Months Ending September, 1915.	
	General Tariff Value.	Prefer- ential Tariff Value.	General Tariff Value.	Prefer- ential Tariff Value.
Tires of rubber for all vehicles:				
From Great Britain	\$1,129	\$2,221	\$9,971	\$16,429
United States	156,060		668,668	
France	1,127		13,585	
Other countries	156		1,130	
Total	\$158,472	\$2,221	\$693,354	\$16,429
*Rubber cement and all manufac- tures of india rubber and gutta percha, N. O. P.:				
From Great Britain	\$299	\$9,117	\$1,612	\$93,587
United States	46,847		278,385	
Other countries	7		334	
Total	\$47,153	\$9,117	\$280,331	\$93,587
Hard rubber, unfinished, in tubes, for manufacture of fountain pens:				
From United States			\$1,941	
Webbing, elastic, over one inch wide:				
From Great Britain	\$10	\$1,078	\$10	\$6,082
United States	13,131		66,829	
Other countries			330	
Total	\$13,141	\$1,078	\$67,169	\$6,082
Boots and shoes:				
From Great Britain		\$1,146		\$11,546
United States	\$11,231		\$37,281	
Other countries			10	
Total	\$11,231	\$1,146	\$37,291	\$11,546
Belting:				
From Great Britain				\$1,041
United States	\$2,534		\$25,346	

*In addition, the imports of rubber cement and all manufactures of india rubber and gutta percha amounted to \$540 from various countries during September, and \$196 from Great Britain, and \$1,277 from other countries for the six months ending September, the values being at treaty rates.

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

MANUFACTURED, DUTIALE—	September, 1915.		Six months Ending September, 1915.	
	Pro- duce of Canada. Value.	Re-exports of foreign goods. Value.	Pro- duce of Canada. Value.	Re-exports of foreign goods. Value.
Belting:				
To Great Britain			\$337	\$58
United States	\$337	\$23	74	
Total	\$337	\$23	\$411	\$58
Hose:				
To Great Britain			\$4,139	
United States		\$28	3,122	\$145
Newfoundland	\$277		2,292	
Other countries	406		1,655	
Total	\$683	\$28	\$11,208	\$145
Boots and Shoes:				
To Great Britain	\$22,758		\$26,486	
United States		\$52	3,510	\$487
Newfoundland	28,956		30,960	
Australia	5,774		10,056	
Other countries	1,404		9,631	
Total	\$58,892	\$52	\$80,643	\$487
Mats and matting:				
To various countries			\$418	
Clothing:				
To Great Britain		\$10	\$27	\$10
United States			39	202
Newfoundland			140	
Other countries	\$13		24	
Total	\$13	\$10	\$230	\$212
*Rubber waste:				
To United States	\$21,224	\$170	\$285,932	\$1,794
All other, N. O. P.:				
To Great Britain	\$101,829		\$345,791	\$1,954
United States	3,811	\$6,557	68,097	266,272
Newfoundland	684	785	3,879	785
Australia			2,964	
Other countries	7,923		29,850	10
Total	\$114,247	\$7,342	\$450,581	\$269,021
†Gum chicle:				
To Great Britain			\$5,000	
United States	\$62,774		326,584	\$91,995
Other countries			39,076	1,107
Total	\$62,774		\$370,660	\$93,102

*For the month of September the total amount, by weight, of rubber waste exported to the United States was 453,900 pounds, and for the six months ending September was 4,719,700 pounds.

†For the month of September the total amount, by weight, of exported chicle gum was 109,368 pounds to the United States, and for the six months ending September was 869,377 pounds, divided as follows: 10,000 to Great Britain, 797,175 to the United States, and 62,202 to other countries.

UNITED KINGDOM RUBBER STATISTICS FOR YEARLY EXPORTS AND IMPORTS OF CRUDE AND MANUFACTURED RUBBER BY COUNTRIES.

IMPORTS.					EXPORTS—CRUDE RUBBER.				
		November, 1915.		Eleven Months Ending November 30, 1915.				1912.	
Unmanufactured—		Pounds.	Value.	Pounds.	Value.			Pounds.	Value.
*Crude Rubber:						Venezuela—			
From Dutch East Indies....	997,000	\$361,067	6,065,900	\$3,268,899	To Germany	224,316	\$140,496		
French West Africa...	54,900	20,481	1,242,900	534,309	United States	662,114	416,642		
Gold Coast	47,700	15,158	587,500	177,754	France	14,940	8,937		
Other countries in Africa	779,100	340,269	5,711,700	2,363,059	Great Britain	86,489	71,361		
Peru	186,500	118,997	1,646,000	860,030	Total	987,859	\$637,436		
Brazil	2,432,000	1,487,218	26,799,900	14,656,656	1912-1913.				
British India	391,300	230,170	2,884,500	1,537,967	Belgium—		Pounds.	Value.	
Straits Settlements, in- cluding Labuan	5,313,900	3,152,089	61,656,400	32,993,675	To Great Britain	1,763,005	\$1,578,691		
Federated Malay States	2,474,100	1,438,633	26,952,600	14,948,194	Hamburg	1,993,253	1,784,867		
Ceylon and dependencies	1,908,300	1,135,320	26,583,700	14,303,789	Italy	109,534	98,082		
Other countries	263,800	126,501	3,792,700	1,848,365	Lubeck	12,896	11,548		
Total	14,848,600	\$8,625,903	163,923,800	\$87,453,695	Norway	16,709	14,962		
Waste and reclaimed rubber..	494,400	\$57,188	3,854,900	\$434,625	Netherlands	2,223,978	1,991,471		
Gutta percha	505,800	238,076	6,602,600	2,835,888	Portugal	24,829	22,233		
					Russia	4,177,894	3,761,115		
					Sweden	353,091	316,177		
					Switzerland	60,843	54,482		
					Other countries	2,358	2,111		
					Total	10,738,390	\$9,635,739		
					1913.				
Manufactured—					Russia—		Pounds.	Value.	
Apparel, waterproofed		\$1,323		\$24,010	To Great Britain		\$263,104		
Boots and shoes—dozen pairs	12,107	136,362	132,527	1,054,878	Germany		54,190		
Insulated wire		18,181		420,487	Holland		14,344		
Submarine cables		875		1,512	Austria-Hungary		6,175		
Automobile tires and tubes...		1,748,978		8,624,162	Denmark		11,779		
Motorcycle tires and tubes...		34,313		507,948	Japan		4,386		
Cycle tires and tubes.....		34,987		237,702	France		6,792		
Tires not specified.....		12,136		96,379	United States		113,271		
					Other countries		1,566		
					Total		\$476,607		
EXPORTS.									
Manufactured—					Africa, Nigeria		1,144,016	372,902	
Apparel, waterproofed:		*		\$172,822	B. W.—Gold Coast Colony		1,287,942	645,133	
To France		\$25,860			B. W.—Gambia		12,995	3,548	
British South Africa.....		16,786		193,073	Bolivia		11,315,060	9,866,813	
British East Indies.....		3,573		121,170	British India—Madras		\$2,046,294	\$2,369,201	
Australia		17,390		209,656	Calcutta		26,266	5,762	
New Zealand		11,557		131,006	Costa Rica		104,614		
Canada		9,821		422,765	Ecuador		427,732	74,344	
Other countries		123,109		1,245,439	Guatemala (to United States).....		62,743	13,177	
Total		\$208,096		\$2,395,931	Nicaragua		487,150	314,314	
Boots and shoes—dozen pairs.		\$95,441		\$602,524	Peru		5,562,000		
Insulated wire		357,069		1,616,227	Quebec District (to United States).....		\$15,973	\$22,647	
Submarine cables		291,440		1,717,335	San Salvador (to United States).....		10,350	6,661	
Automobile tire and tubes...		273,837		2,951,055	Venezuela		402,000	308,000	
Motorcycle tires and tubes...		40,514		359,349	1913-14.				
Cycle tires and tubes.....		234,024		1,871,946	Siam		33,431	15,533	
Tires not specified.....		52,435		497,232	Tobago		545	195	
Manufactures not specified...		457,341		4,624,081	Uganda		22,056	19,454	
					EXPORTS—BALATA.				
EXPORTS, FOREIGN AND COLONIAL.					Venezuela		1913. Pounds.	1914. Pounds.	
Unmanufactured—						4,402,000	1,372,000		
*Crude Rubber:					1913-14.				
To Russia	4,898,200	\$2,632,837	24,150,600	\$12,930,686	French Guiana		91,728	115,004	
France	827,300	465,821	13,669,600	7,680,866					
United States	5,001,200	2,823,816	78,104,100	42,135,763	IMPORTS—CRUDE RUBBER.				
Other countries	1,223,300	709,677	16,232,000	8,973,368			1911.		
*Total	11,950,000	\$6,632,151	132,156,300	\$71,720,683			Pounds.	Value.	
Waste and reclaimed.....	27,500	\$3,766	635,800	\$96,228	Uruguay			\$4,027	
Gutta percha	106,000	30,253	829,600	352,544	1912-1913.				
Manufactured—					Belgium—		Pounds.	Value.	
Apparel, waterproofed		\$219		\$2,367	From France	2,575,197	\$2,305,972		
Boots and shoes—dozen pairs.	4,802	27,649	1,177,100	83,019	Great Britain	4,401,399	3,981,253		
Insulated wire		2,614		32,338	Hamburg	1,329,682	1,190,670		
Automobile tires and tubes...		258,887		2,565,681	India—British	102,681	91,946		
Motorcycle tires and tubes...		2,711		61,931	Indies—Dutch	41,587	37,239		
Cycle tires and tubes.....		3,349		108,402	Japan	721,629	646,186		
Tires not specified.....				31,172	Mexico	290,785	260,385		
					Netherlands	2,462,577	2,205,125		
					Portugal	1,042,642	933,648		
					Roumania	95,696	85,691		
					Switzerland	62,495	55,962		
					Turkey	37,409	33,298		
					Other countries	104,982	94,006		
					Total	13,268,761	\$11,951,381		
					*Included in "Rubber" prior to 1915. After 1914 "Rubber" is separated into "Raw" and "Waste and Reclaimed."				

*Included in "Rubber" prior to 1915. After 1914 "Rubber" is separated into "Raw" and "Waste and Reclaimed."

EXPORTS—RUBBER MANUFACTURES.

	1912-1913.	
	Pounds.	Value.
Belgium—		
To Great Britain	183,460	\$209,504
Hamburg	5,722	7,108
India—British	5,828	3,560
India—Dutch	7,033	8,252
Italy	21,564	33,458
Lübeck	3,524	3,296
Netherlands	140,195	109,842
Portugal	8,598	5,998
Russia	6,932	8,442
Sweden	3,865	4,856
Switzerland	12,852	15,590
Turkey	30,312	13,022
Other countries	18,539	12,145
Total	448,424	\$435,073
	1913.	1914.
	Value.	Value.
Austria-Hungary (to United States)	\$35,833	\$69,377
Germany (to United States)	49,795	40,537
Russia—		
To Germany	\$993,564	.....
Finland	485,310	.....
Turkey	275,241	.....
Sweden	99,358	.....
Persia	57,693	.....
Great Britain	395,307	.....
Belgium	189,241	.....
China	88,211	.....
Other countries	431,161	.....
Total	\$3,015,086	.....

IMPORTS—RUBBER MANUFACTURES.

	1911.	
	Pounds.	Value.
Uruguay—		
From United States .....	.....	\$4,417
Germany .....	.....	11,591
Argentina .....	.....	754
Belgium .....	.....	9,039
Spain .....	.....	96
France .....	.....	7,264
Italy .....	.....	4,168
Great Britain .....	.....	17,684
Total .....	.....	\$55,013
	1911-1912.	
Turkey—	Pounds.	Value.
From Great Britain .....	.....	\$479,656
Austria .....	.....	261,109
Germany .....	.....	186,761
France .....	.....	90,078
United States .....	.....	192,179
Total .....	.....	\$1,209,783
German S. W. Africa (1912) .....	.....	\$16,732
	1912-1913.	
Belgium—	Pounds.	Value.
From Great Britain	978,100	\$543,123
Hamburg	12,390	6,992
Italy	271,610	264,799
Netherlands	61,373	33,119
Russia	44,312	31,120
Sweden	34,439	9,938
Switzerland	20,504	17,133
Other countries	4,385	1,122
Total	1,427,113	\$907,346
	1913.	1914.
	Value.	Value.
China, Hankow	\$16,079	\$7,918
Costa Rica	19,823	.....
French West Indies	2,852	299
Karachi	30,815	28,613

Nicaragua—

	1913- Value.	1914. Value.
From United States	\$21,961	\$19,824
Germany	4,484	2,455
England	2,526	1,834
France	1,790	1,667
Italy	53	25
Spain	27	.....
Costa Rica .....	.....	25
Other countries	390	1
Total	\$31,231	\$25,831
Canada—Quebec District—		
From United States	\$14,323	\$11,448
Other countries	27,190	20,900
Total	\$41,513	\$32,348
Tripoli (from United States)	\$675	\$850
Turkey .....	.....	27,610
Union of S. Africa—		
From Great Britain	\$141,230	\$131,490
Germany	14,610	14,610
United States	14,610	14,610
Other countries	4,870	4,870
Total	\$175,320	\$165,580
	1913-14.	1914-15.
Calcutta	\$675,195	\$885,760
Siam	119,508	103,702

THE RUBBER SCRAP MARKET.

QUIET best describes the market for scrap rubber of late, following the excitement that prevailed over prices at the beginning of the month. In some quarters shoes were reported easier, though current quotations do not bear this out. The flurry in prices served to bring out some unexpected lots, but not in sufficient quantity to affect the market, the figures consumers offered being no inducement to dealers. Some reclaimers asserted their ability to pick up small quantities at ten cents and even a little lower.

Tires being in fairly liberal supply the situation and immediate outlook in this branch are irregular and uncertain, though prices are quite strong. Dealers, however, report increasing stocks on hand, which does not make for higher prices, and unless the price of crude rubber makes the advance foretold tires are likely to remain at prevailing figures.

Mechanical scrap is very firm in price and in good demand, particularly matting, packing and hose, garden hose being in special request.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

December 30, 1915.

	Per Pound.
Boots and shoes	\$0.10 1/4
Trimmed arctics .....	.08 1/4
White tires, Goodrich and Goodyear .....	.07 3/4
Auto tires, standard white .....	.05 3/4
Auto tires, standard mixed .....	.05 3/4
Auto tires, standard mixed .....	.03 1/2
Auto tires, standard mixed .....	.03 1/2
Auto peellings, No. 1 .....	.09
Auto peellings, No. 2 .....	.07 3/4
Innter tubes, No. 1 .....	.27
Innter tubes, No. 2 .....	.12 1/2
Innter tubes, red .....	.12 1/2
Irony tires .....	.02
Bicycle tires .....	.03 1/4
Solid tires .....	.05 1/4
White scrap, No. 1 .....	.11 1/2
White scrap, No. 2 .....	.09 1/4
Red scrap, No. 1 .....	.05 1/4
Red scrap, No. 2 .....	.07 1/4
Mixed black scrap, No. 1 .....	.03 3/4
Mixed black scrap, No. 2 .....	.03
Rubber car springs .....	.03 1/2
Horse shoe pads .....	.03 1/2
Matting and packings .....	.01
Garden hose .....	.01 3/4
Air brake hose .....	.02 1/4
Cotton fire hose .....	.02 1/4
Large hose .....	.01 1/2
Hard rubber scrap, No. 1, bright fracture .....	.23
Battery jars (red compound)02 1/2
Insulated wire stripping02 1/2
Rubber heels03 1/2



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WHY RUBBER DEALERS ARE NOW ON THE "BULL" SIDE OF THE MARKET.

An explanation of the apparent anomaly of a "rising market on increasing stocks" is afforded by the changed attitude of dealers. Under the auction system, before the war, rubber was constantly coming into the market in unlimited quantities to be sold at any price the dealer chose to give. The effect of this was to make persistent bears of the dealers who were interested in getting the rubber at lowest figures for subsequent re-sale to consumers at a profit. The war changed things. The embargo on exports, delays and uncertainties in transportation and delivery, so interfered with supplies that the dealers became interested in obtaining better prices for the stocks on hand, and from bears were transformed into bulls.

